AUGUST 15, 1960

PAPER TRADE JOURNAL

Ten Years of Slice and Perforated Roll Developments for Headboxes

German Technical Men Meet at Garmisch, Hear Practical Papers

Comparing Costs of Unloading Five Types of Pulpwood RR Cars

Fives Areas for Conical Refiner Care Are Defined and Discussed

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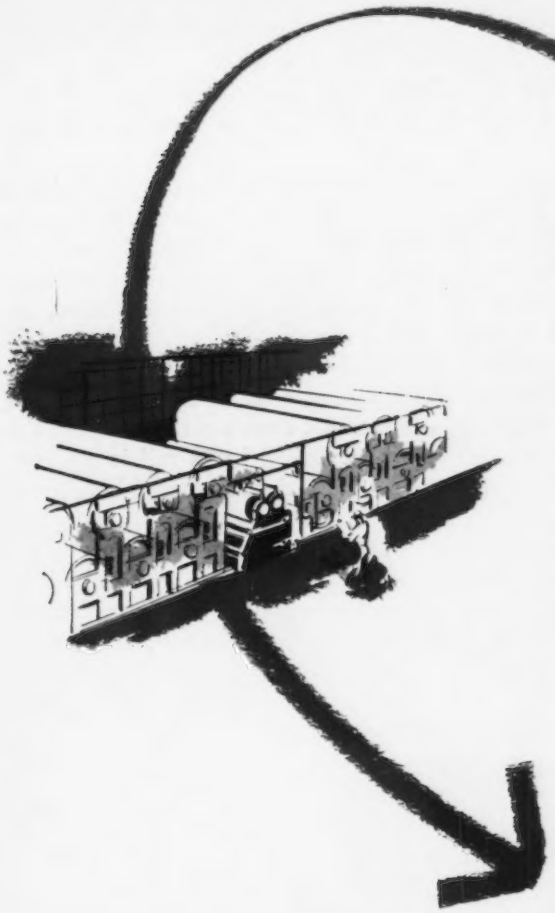

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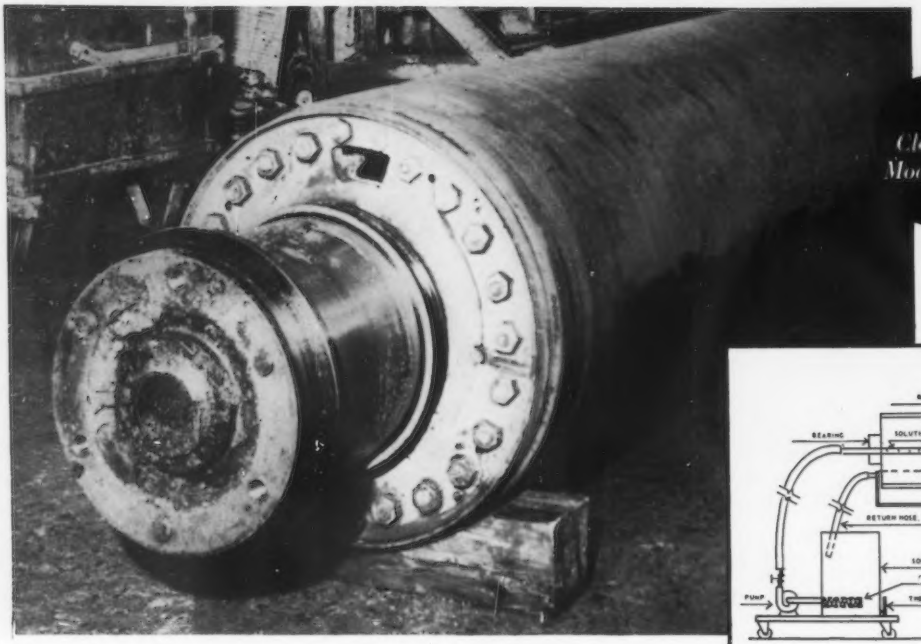
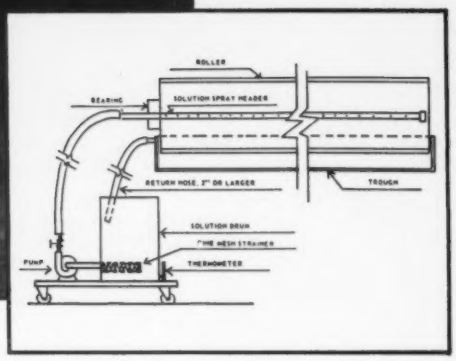


Modern Cleaning Systems for Modern Paper Making



This suction press roll should have stayed in bed

It didn't have to be taken down, then tediously cleaned by drilling. It could have remained bedded in place while it was cleaned *chemically*, the Oakite way. Cleaned faster, easier, at lower cost. One mill, running a saturated asphalt paper line, found that Oakite in-place methods saved them over $835 a year just on suction press roll cleaning.

How system works

Working with the plant superintendent, the Oakite man suggested building a cleaning solution tank with pump and hose connections. Installed was a permanent save-all *under* the roll and a connection to the shower pipe *inside* the roll.

Solution of Oakite No. 85 sprayed inside of the roll, flows through the holes to the overflow tank. Meanwhile, the roll rotates through the solution accumulated in the save-all. After half hour of circulation, followed by a rinse, the job is done.

Drill-out method cost $1,516 yearly for pulling, cleaning and replacing roll four times. Done six times a year, the Oakite method keeps roll in top condition, eliminates dismantling, costs only $681.

Your Oakite man can help you get better cleaning at lower cost. Talk to him about setting up a modern cleaning system for the whole mill. Call him, or send for Bulletin B-4591 to Oakite Products, Inc., 74 Rector Street, New York 6, N. Y.

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over 50 Est. 1909 SCIENCE

years' leadership in industrial cleaning

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what makes this new method so successful?

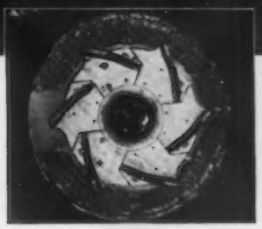
Triple Attack pulping is an advanced method, exclusive in the new Emerson Pulper, that *multiplies the number of defibering cycles which take place within a given period.* Thus, it guarantees maximum defibering on all types of stock — in 20 to 30 minutes — wet strength slightly longer. It also offers complete pulping at 8 to 12% consistency, uniform mixing, fast charging and dumping, and extremely low power consumption at full or partial capacity.

The success of the Emerson Triple Attack Pulper lies in its advanced lobe shape, tapering tub walls, conical bottom and effective impellor action.

Pulp fibers are subjected to a relentless triple attack by (1) the violent agitation of the impellor, by (2) the force and friction of fiber contact with the specially designed tub walls, and by (3) the vigorous hydraulic defibering action caused when on-coming stock streams from the impellor hit the flow of stock returned by the tub walls.

Because of this exclusive tapered and lobed wall construction, all "dead spots" are eliminated. Triple Attack pulping provides complete defibering by the fastest, most economical method yet devised.

For further information, please write to The Emerson Manufacturing Co., Division of John W. Bolton & Sons, Inc., Lawrence, Massachusetts.

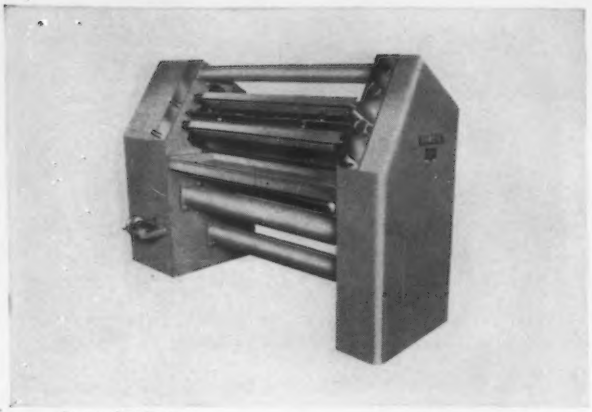


The rotor and extraction plate

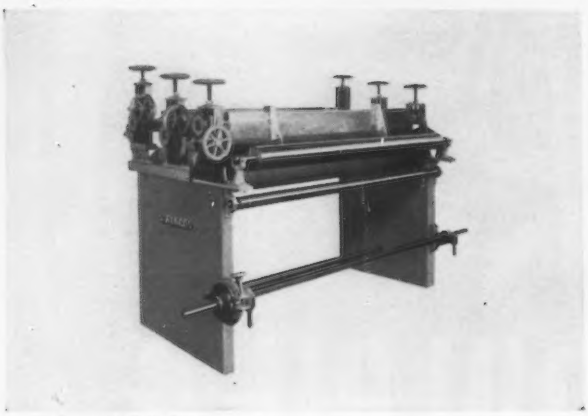
View of vortex and stock flow at 8-9% consistency

Emerson TRIPLE ATTACK PULPER

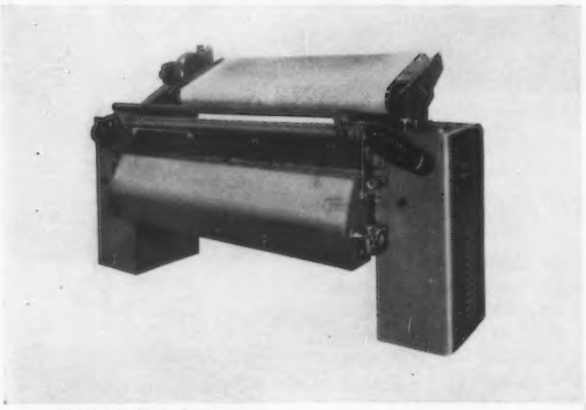
A product of BOLTON EMERSON



Reverse Roll Coater



Sequential Knife Coater



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WALDRON ADVANCE DESIGN *standard* COATERS SOLVE MANY *special* COATING PROBLEMS

As manufacturers of coating machines for the web processing industry for over a century, Waldron engineers have been called upon to solve innumerable coating problems. The Waldron "standard" line of advanced design coating like those illustrated reflects this vast experience.

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Complete coating lines including web handling equipment with our Ross Division convection dryers are engineered by Waldron as a single responsible source of supply.

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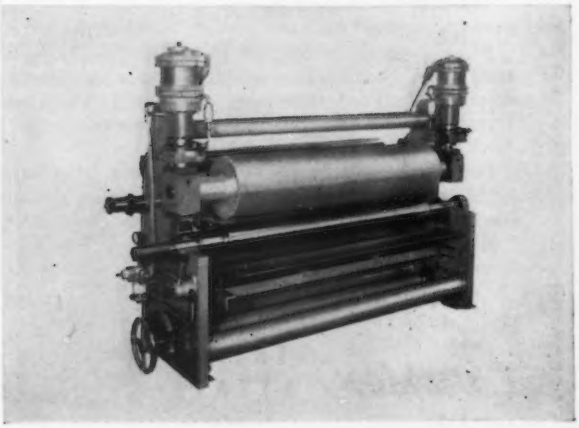

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PAPER TRADE JOURNAL

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REMEMBER THESE DATES

August 22-24, TAPPI Alkaline Pulping Conference, Multnomah Hotel, Portland, Ore.

September 6-9, CPPA Summer Meeting, Technical Section, Banff Springs Hotel, Banff, Alberta, Canada.

September 18-21, NPTA Semi-Annual Convention, Conrad Hilton Hotel, Chicago, Ill.

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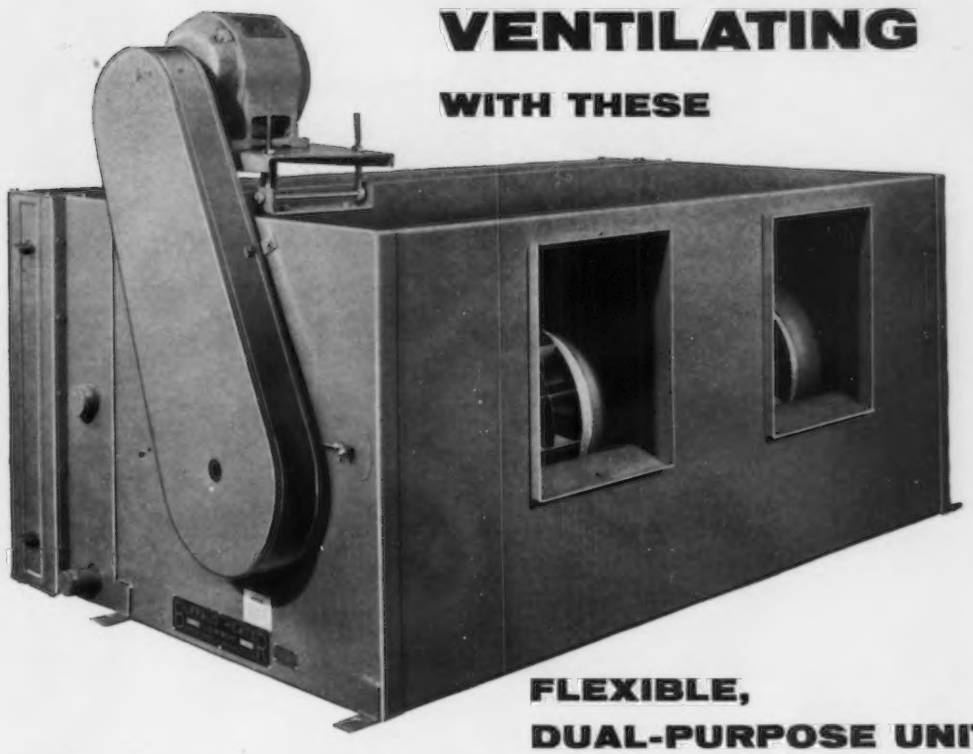

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Jones refiners

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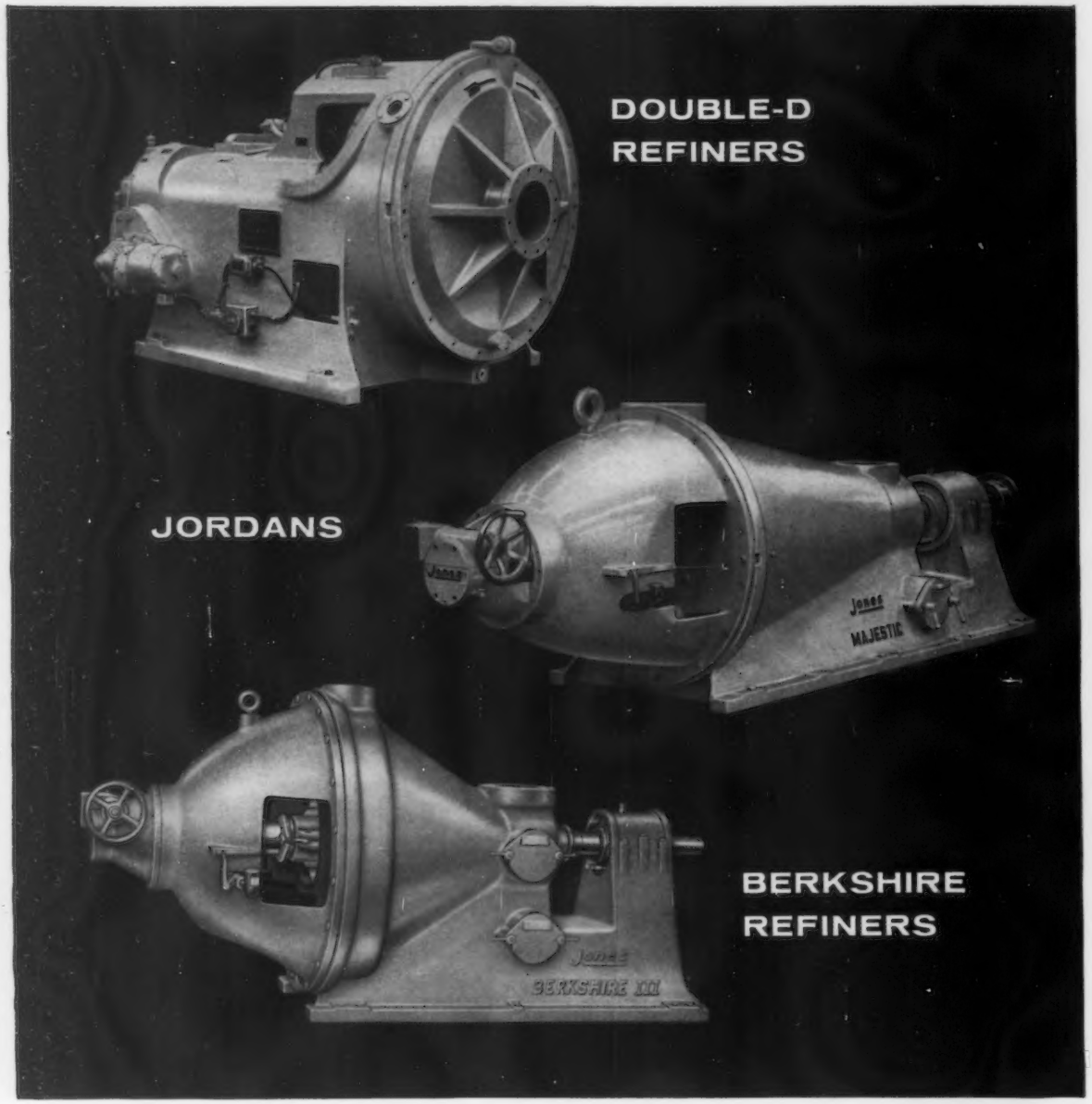

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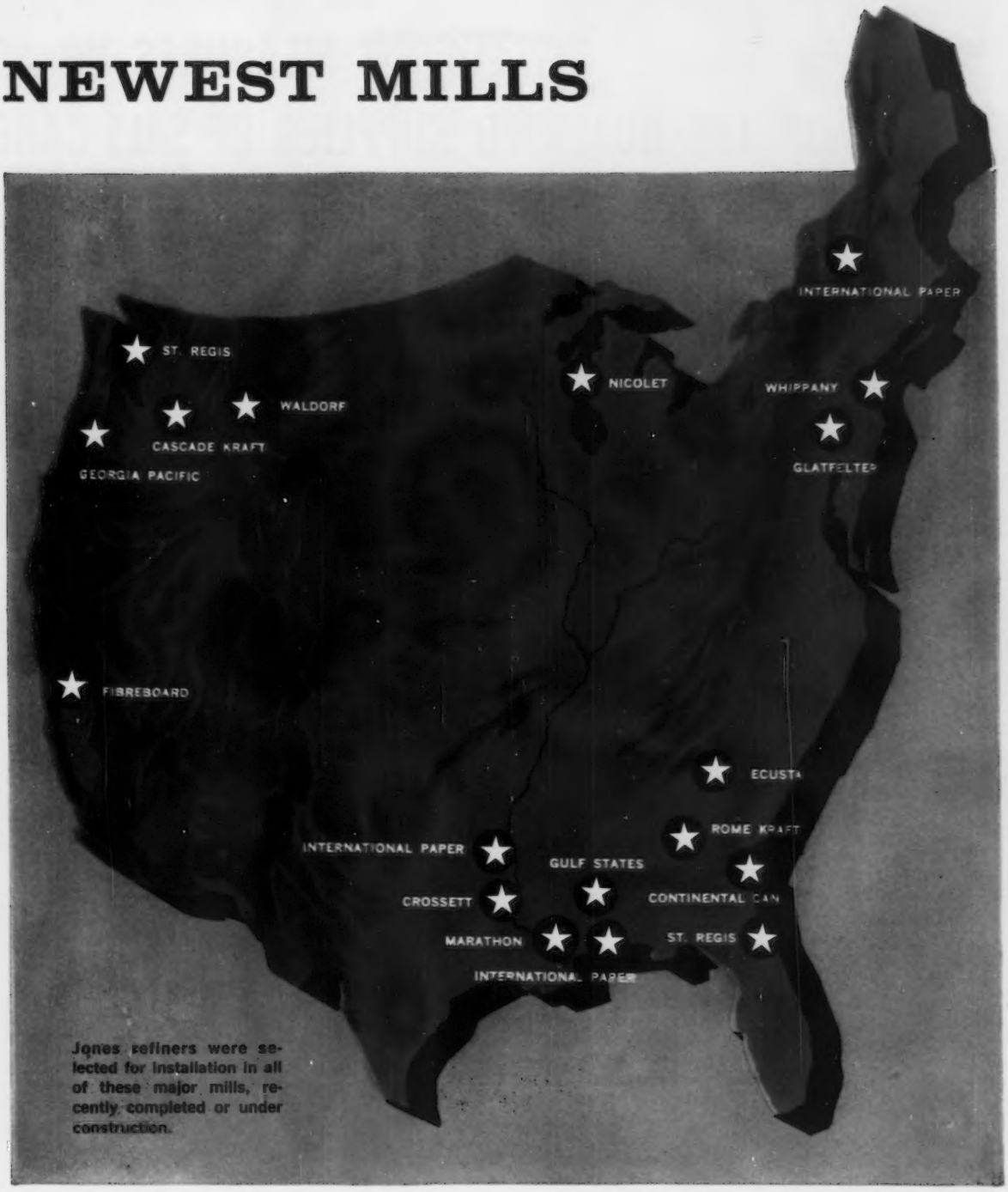
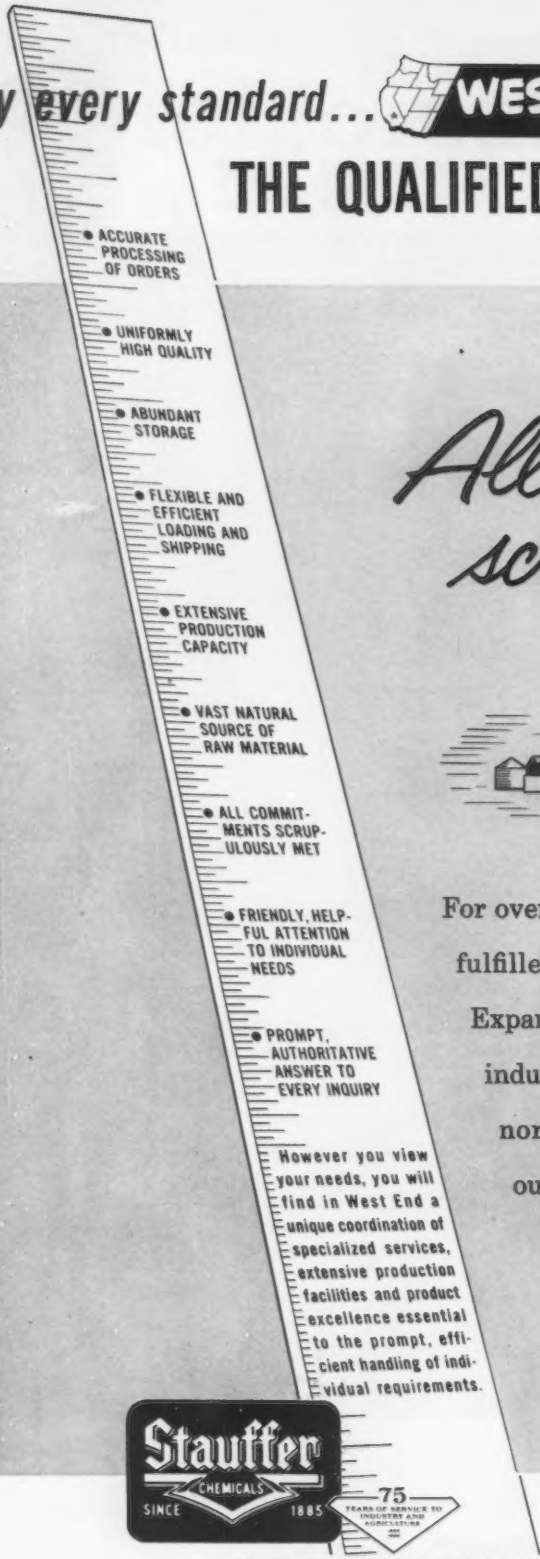


Check the record. Wherever you find new mills — mills designed and built for top performance and maximum efficiency — you're likely to find Jones refiners. There's a type and size to fit every requirement — each precision designed and custom built to fit individual mill requirements. If you are thinking of modernizing, it will pay you to include Jones in your plans.

By every standard... WEST END MEASURES UP AS THE QUALIFIED SUPPLIER OF SALT CAKE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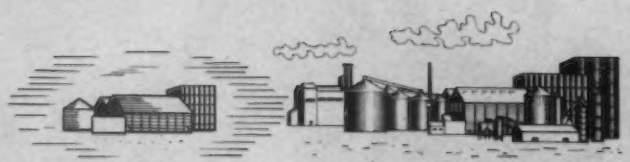
All commitments scrupulously met



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For over 35 years, West End has unconditionally fulfilled every commitment it has ever made. Expanding along with the chemical processing industry, West End meets the ever-increasing normal and unanticipated requirements of our customers with equal ease and dispatch.

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RS P.I.V.

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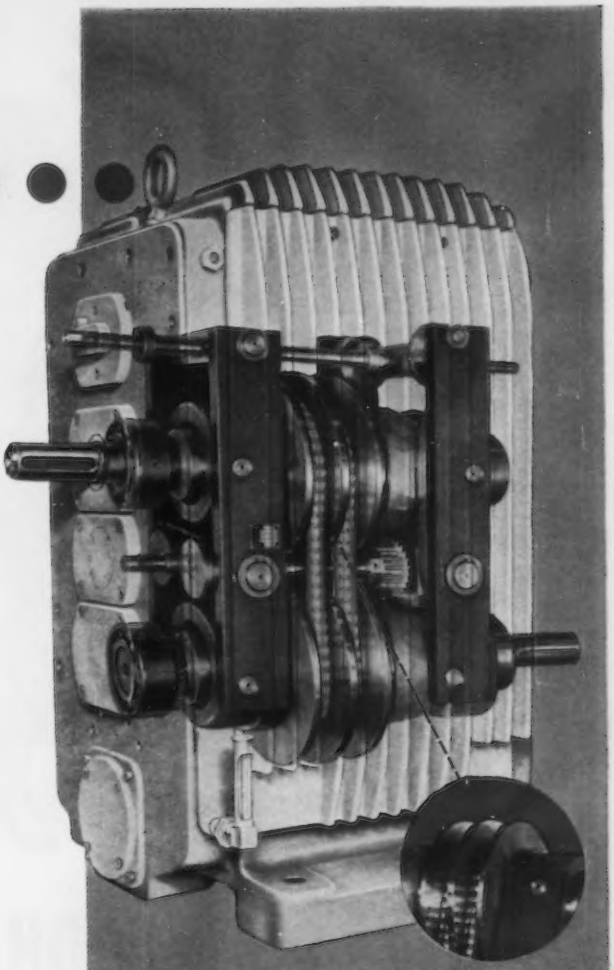


RS-33 P.I.V. with twin chain arrangement for capacities to 50 hp. Inset shows close-up of unique all metal single roll chain construction.

All-metal drives use single-roll chains to achieve positive, stepless, infinitely variable speed control

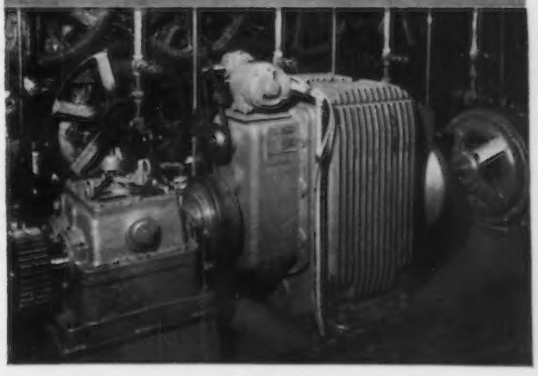
With a unique chain design and force lever system, Link-Belt RS P.I.V. drives represent a major advance in direct-drive variable-speed transmission. It's the most compact mechanical 50 horsepower variable speed drive on the market.

Twin strands of high-load capacity chain operating between opposing conical wheels permit extreme compactness. The effective diameters of the wheel faces are altered during operation, changing their ratio and the output shaft speed accordingly . . . providing smooth, positive, accurate speed adjustment between maximum and minimum settings. Constant hp or torque is maintained over the complete speed range.

Link-Belt RS P.I.V. drives are all-metal and pressure-lubricated. Capacities to 50 hp, with speed variation ratios up to 5.5:1. For full details, contact your nearest Link-Belt office or authorized stock-carrying distributor. Ask for new Catalog 2874.

15,390

47-ROLL PAPER-MAKING MACHINE uses Link-Belt RS P.I.V. on primary drive. The RS P.I.V. powers a two-speed gear drive which enables paper speeds to be varied over two ranges . . . 4 to 16 yards per minute and 12½ to 50 yards per minute.



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Statistics show that since 1926, when Norton produced the first successful pulpstone, many of the thousands of Norton pulpstones used by paper mills in all parts of the world have had an average productive life of more than 30,720 hours. Most have produced an average of more than $5,000,000 worth of pulp. That's championship performance in any language!

Today, as in the past, each Norton pulpstone is carefully engineered to meet the special requirements of each individual mill. To get championship pulpstone performance in *your* mill, consult the Norton pulpstone engineer in your territory. He is qualified by experience to study your mill and to recommend just the right Norton pulpstone for your type of wood, your type of grinder and the type of pulp you want to produce.

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NORTON PULPSTONES *the world's standard for mechanical pulp*

75 years of . . . Making better products . . . to make your products better

NORTON PRODUCTS: Abrasives • Grinding Wheels • Machine Tools • Refractories • Electro-Chemicals — BEHR-MANNING DIVISION: Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes

*Idea submitted by Robert F. Chase, Franconia Paper Corp., Lincoln, N. H.

Photo by: Ewing Galloway, N. Y.

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" 'The Old Man of the Mountains', or 'Great Stone Face', has well endured the rigors of New Hampshire's weather. Likewise, Hamilton Felts always stand up under the continual running streams of stock, and the constant pressures of making paper and box board.

"And long, trouble-free service and consistent high quality performance you get from Hamilton Felts means savings and mounting profits."

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Ask the Hamilton Felts service salesman in your territory about our 300 proven styles. If one of our "standard 300" won't solve *your* needs, we will be happy to design a Hamilton Felt that will.

*WIN... *A NEW Shakespeare Spincast Fishing Outfit!*

"What famous place reminds you of Hamilton Felts? Tell us why in a few words; sign your name and address and name of company. Each month, the idea from a papermaker that we use wins a new 1960 model Shakespeare Spincast Rod and Reel—FREE! When identical winning ideas are submitted by 2 or more papermakers, the one with the earliest postmark will be considered the winner. *Every U.S. papermaker entrant* receives a famous Rex Spoon fishing lure—FREE. Send me your suggestion—today. Ham Feltz, 612 First National Bank Bldg., Cincinnati 2, Ohio."

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Now, more than ever, Buckeye is the prime source for bleached kraft. For brochure describing Buckeye pulps for the paper industry, write

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How Du Pont brighter pulp...save

Mechanical pulp bleaching...

A combination of peroxides can save up to $1.25 a ton over a hydrogen peroxide treatment.

Over 95% of all groundwood bleacheries have found that a combination of hydrogen and sodium peroxides cuts bleaching costs up to $1.25 a ton. The reason—combination formulas eliminate the use of caustic soda.

How is this possible? Because of the bleaching chemistry involved. When hydrogen peroxide is used alone, substantial quantities of caustic soda must be added to assure effective bleaching. But when sodium peroxide is part of the formula, caustic soda is formed, and additional quantities aren't needed. When caustic limits of this solution are reached, hydrogen peroxide is added to complete the balance, and the bleaching formula is now ready to use.

The charts below show the savings possible in a one-stage tower bleaching process when a combination of peroxides is used instead of a single hydrogen peroxide: For normal brightness, the saving runs from $.90 to $1.00 a ton; for premium brightness, $1.15 to $1.25 a ton.

You can obtain cold soda pulp and groundwood pulp brightness as high as 75 by this method. Cold soda pulp can be bleached in the refiner in absence of a bleaching tower with brightness gains up to 20 points.

For further information, get in touch with your Du Pont Representative listed at right.

EXAMPLE #1

ONE-STAGE TOWER PROCESS FOR NORMAL BRIGHTNESS

A. Using combination of peroxides

5.0% silicate
1.2% "Solozone" sodium peroxide
0.7% "Albone" 50 hydrogen peroxide

B. Using one peroxide only

5.0% silicate
1.2% NaOH
1.7% "Albone" 50 hydrogen peroxide

SAVINGS OF $.90 TO $1.00 PER TON BY USING COMBINATION OF PEROXIDES

EXAMPLE #2

ONE-STAGE TOWER PROCESS FOR PREMIUM BRIGHTNESS

A. Using combination of peroxides

5.0% silicate
1.5% "Solozone" sodium peroxide
1.25% "Albone" 50 hydrogen peroxide

B. Using one peroxide only

5.0% silicate
1.5% NaOH
2.5% "Albone" 50 hydrogen peroxide

SAVINGS OF $1.15 TO $1.25 PER TON BY USING COMBINATION OF PEROXIDES

Peroxides give you you up to $1.25 a ton!

Chemical pulp bleaching...

Peroxides—alone or in combination—give brightness up to 92 with excellent stability.

Mills throughout the country are finding that peroxides, alone or in combination, can give chemical pulp high brightness stability—without significant decrease in pulp strength or yield.

IN KRAFT BLEACHING, a five-stage process is producing outstanding results for a number of mills, among them a southern papermaker now producing over 100,000 tons of high brightness pulp annually. This process combines the best advantages of three bleaching agents—hypochlorite, chlorine dioxide and peroxide—to give brightnesses up to 90 with excellent brightness stability.

IN SULFITE BLEACHING, three peroxide processes are proving successful—a single-stage peroxide process which brightens pulp up to 75; a two-stage hypochlorite-peroxide process which brightens up to 86; a four-stage chlorine-caustic-hypochlorite-peroxide process which brightens up to 92. For information, call your Du Pont Representative listed below.

TECHNICAL SERVICE FOR YOU . . . Peroxides have a powerful bleaching action that produces high brightness pulp with excellent brightness stability. But it takes skill and experience to use peroxides efficiently. With Du Pont "Albone" hydrogen peroxide and "Solozone" sodium peroxide, you get the most authoritative advice and service available . . . from the manufacturer of *both* products.

Du Pont specialists can give you practical bleaching formulas for groundwood, cold soda, kraft and sulfite. They'll help you set up your bleaching operation, train operators, and check frequently to make sure your bleaching quality stays high and costs stay low.

Call your Du Pont representative listed below; he'll be glad to start a program to help you determine the advantages of Du Pont peroxides in your mill, or write: Du Pont, Electrochemicals Department, Peroxygen Products Division, Wilmington 98, Delaware.

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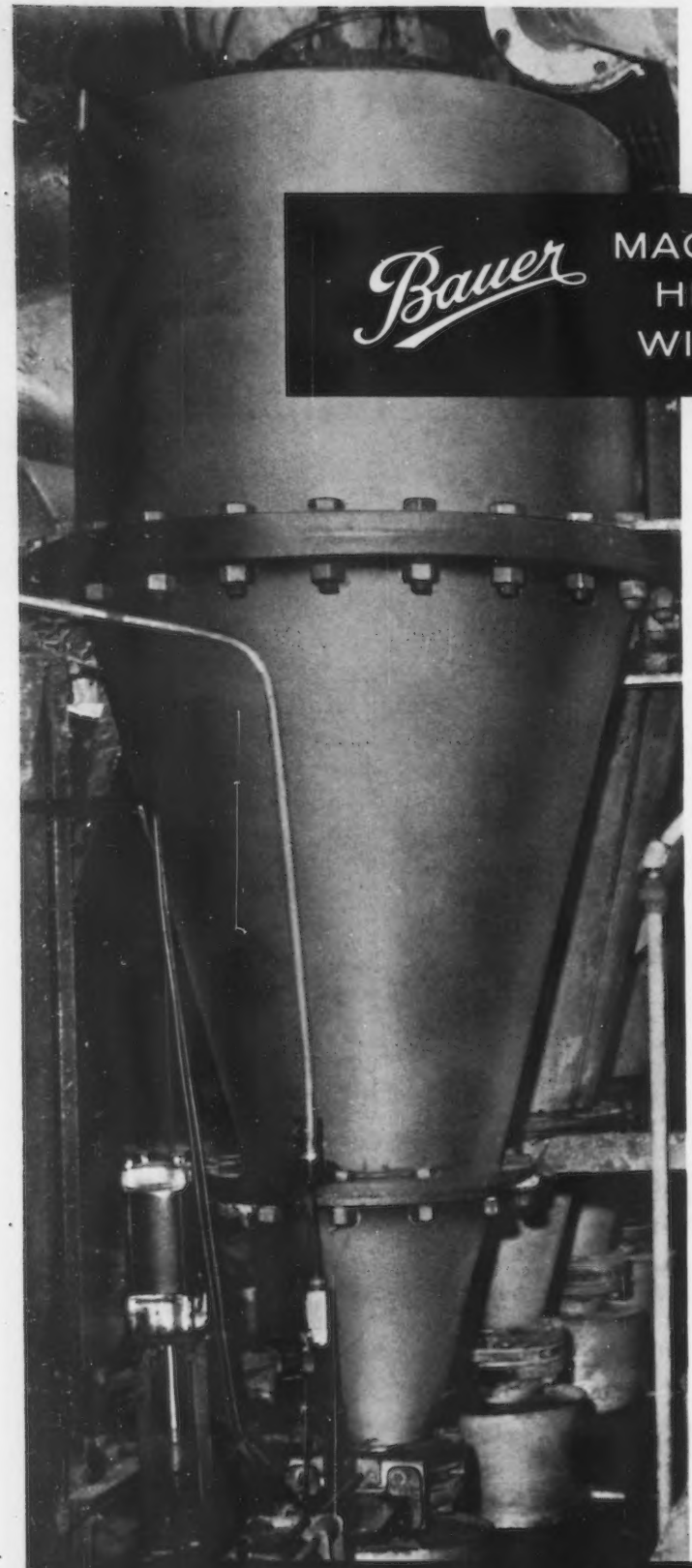
SOLOZONE® sodium peroxide

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



Bauer MAGNA* CLEANERS HELP INCREASE WIRE LIFE 60%

Wire life of only 4½ to 5 days was an expensive problem at a large southern kraft board mill.

To correct this situation, two things were done. First, the board machine was equipped with a Flo-Vac to reduce drag on the wire. However, sand, pipe scale, inorganic grit and other abrasive material in the pulp continued to shorten wire life drastically.

Next, eleven Bauer Magna Cleaners were installed. Nine of these 46″ diameter units, which stand eleven feet high, clean stock for the base sheet. Two deliver to the secondary headbox. As soon as the cleaners were installed wire life jumped to 7½ to 8 days—an increase of 60%! Mill personnel estimate this represents a saving of 18 wires a year on one machine, or approximately $63,000, not including labor costs or down time!

These efficient, low pressure cleaners handle a large volume . . . they could help save money in your mill, too. Ask for details.

*

Magna is Latin for big. Nearly 46,000 GPM . . . that's the total capacity of eleven Bauer Magna Cleaners in the installation described above.

THE BAUER BROS. CO., Springfield, Ohio

PLANT SITES FOR PULP AND PAPER

There are many fine sites remaining for pulp and paper mills in the Seaboard Southeast, where the industry has made spectacular growth in recent years.

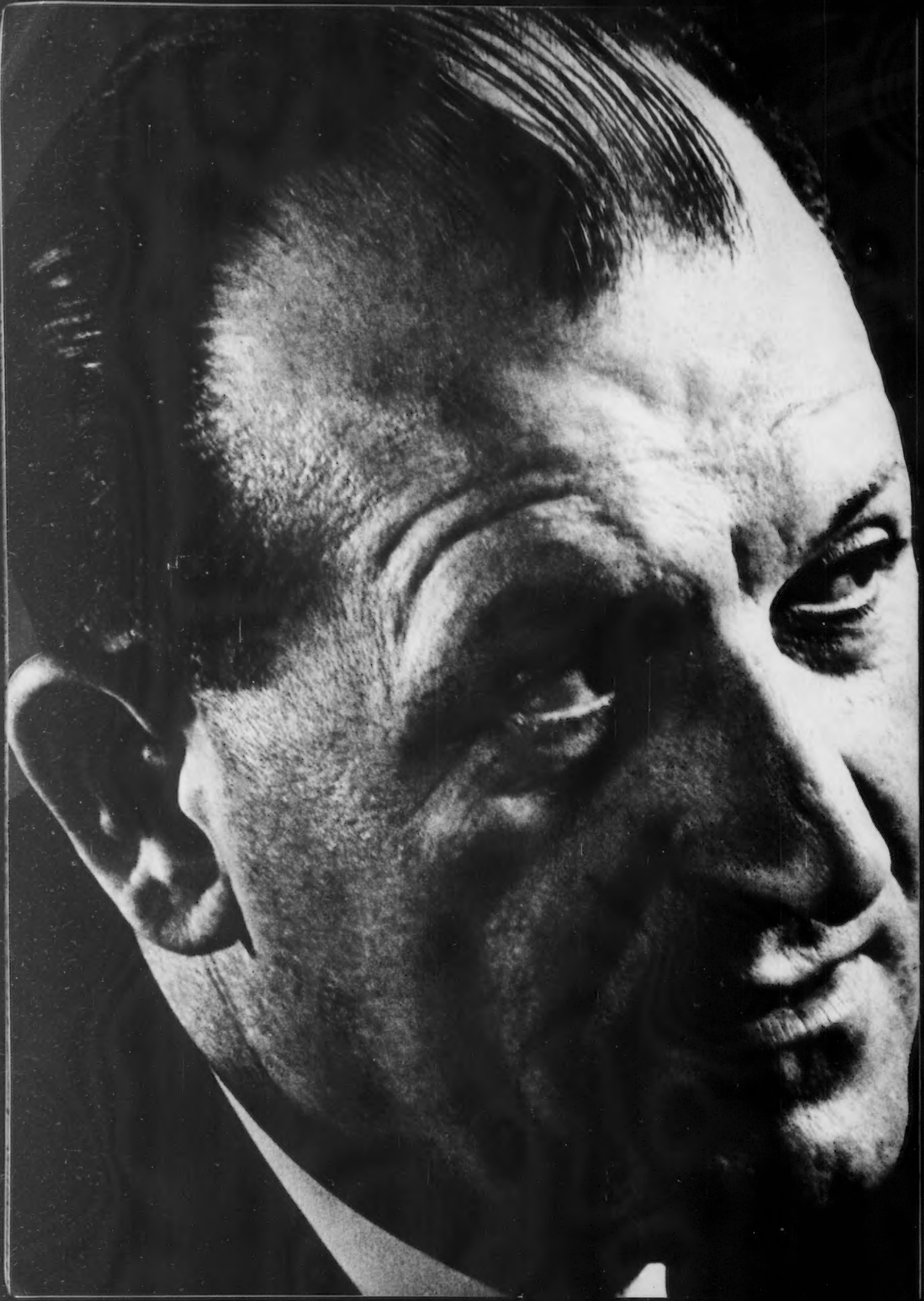
Furthermore, the timber resources of the region assure adequate supplies of wood for the prospective increased demands of the future.

FREE SITE INFORMATION

We are prepared to furnish details on excellent sites where timber and water are in abundant supply and where other factors are favorable for pulp and paper operations.

When you are in the market for a pulp and paper location, converter plant or distribution facility, why not take advantage of the free services of an organization which has specialized successfully in pulp and paper locations for more than thirty years?

Address: Warren T. White
Assistant Vice President
Seaboard Air Line Railroad Company
Richmond 13, Virginia



Paul McHail, who directs the prompt handling of thousands of orders each month, says you'll like doing business with Columbia-Southern

Customers' orders flowing through Columbia-Southern's Order and Service Department, directed by Paul McHail, are routed without delay to the appropriate shipping point by means of a modern, direct communications network. During their brief passage through the Department, they are checked against customers' standing specifications and given complete routing instructions by representatives of the Traffic Department. The central location of Order and Service at Columbia-Southern's Pittsburgh Headquarters provides close contact with product managers and others, making fast decisions an everyday reality.

Shipping Departments at each plant work as efficiently to carry out the instructions promptly and accurately, speeding products to users as directed.

District Sales Offices play a big part in the function, maintaining close contact with customers and serving as direct liaison between Columbia-Southern and the customer organization, promptly relaying special instructions, questions, and answers in both directions, and providing users of Columbia-Southern Chemicals with the greatest possible degree of flexibility.

This concern for doing things the customer's way explains why so many organizations, representing every industry, rely on Columbia-Southern as a primary supplier of their chemical requirements. They like Columbia-Southern's habit of giving more than just the products specified on the order form. So will you!

Anhydrous Ammonia, Barium Chemicals, Benzene Hexachloride, Calcium Chloride, Calcium Hypochlorite (Pittchlor®, Pittabs®), Carbon Tetrachloride, Caustic Potash, Caustic Soda, Chlorine, Chlorinated Benzenes, Chloro IPC, Chrome Chemicals, Hydrogen Peroxide, Muriatic Acid, Pacific Crystals, Perchlorethylene, Rubber Pigments (Calcene®, Hi-Sil®, Silene®), Soda Ash, Sodium Bicarbonate, Sodium Sulfate, Titanium Tetrachloride, Trichlorethylene

columbia | southern chemicals

COLUMBIA-SOUTHERN CHEMICAL CORPORATION • A Subsidiary of Pittsburgh Plate Glass Company • One Gateway Center, Pittsburgh 22, Pa.

ADVERTISE UNTO OTHERS . . .

Open letter to suppliers who serve the paper and pulp industry

The Golden Rule applies to advertising as much as it does to other human relationships. It's just plain good business to "advertise unto others as you would have them advertise unto you."

You know what you want in an ad when you are considering a purchase:

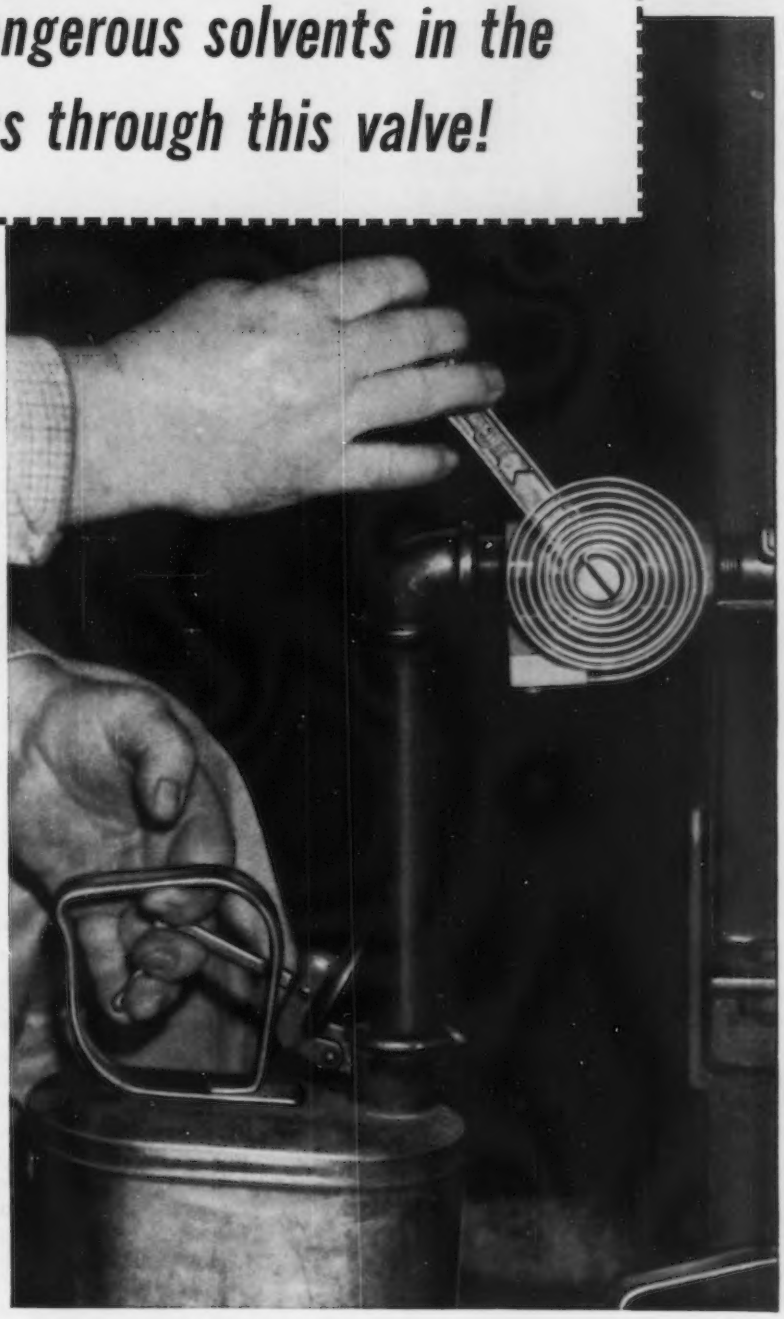
- Quick identification of the product.
- An indication of what the product can do for you.
- Pictures, if they help you understand the product or how it works.
- Description—size, capacity, range, or other data to let you know whether or not the product meets your need.
- Evidence that the product does a good job for others, to assure you of its reliability and acceptance.
- Name and address of the company or its nearest dealer or representative, to enable you to get more information without delay.

These elements are what most of us would like to see in ads. Are these same elements being provided in the advertisements run by your company? If so, you can be sure your ads will be read carefully at the time your prospects need a product like yours. (Some of the mill men looking over this very issue need your kind of product right now.)

George E. Lockwood PUBLISHER

PAPER TRADE JOURNAL

The most dangerous solvents in the world pass through this valve!



But it's a *safe* passage. The ROCKWOOD ¾" (Fig. 802) Self-Closing Ball Valve is designed for *smooth, leakproof* handling of highly flammable liquids. A Rockwood Exclusive!

Take a typical installation at an experimental station of one of the nation's largest chemical companies. Here 36 different solvents, ranging from acetone to xylene, are dispensed from bulk containers. All types of self-closing valves were tried and evaluated for this critical job. None equalled ROCKWOOD for positive performance.

Unique ROCKWOOD Full Round Flow design holds turbulence to an absolute minimum — keeps static at a low level. Flash potential is negligible, greatly reducing fire hazard. In addition, the exclusive "*Spring Pressure* Compensation" keeps ball and seat in snug contact — assures leakproof, dripless shut-off, compensates for wear. Bronze valve body and Teflon trim resist corrosion. After 11 months and 103,200 open-and-shut cycles the company reports: trouble-free operation since installation.

Be as safe and sure with your solvent handling. Send coupon for complete details on the ROCKWOOD Self-Closing Ball Valve. Tested and listed by Underwriters' Laboratories, Inc.

ROCKWOOD BALL VALVES

FULL, ROUND FLOW

Distributors in all principal industrial areas

ROCKWOOD SPRINKLER DIVISION
of The Gamewell Company • Subsidiary of E. W. Bliss Company
1008 Harlow Street, Worcester 5, Massachusetts

Please send me complete details on the ROCKWOOD ¾" (Fig. 802) Self-Closing Ball Valve.

Name .....
Title .....
Company .....
Street .....
City ..... *Zone* ..... *State* .....

GET more FOR YOUR core DOLLAR....

Sonoco's coast to coast plant locations assure dependable supply and uniform quality!

No matter where you are located, one of SONOCO's plants is nearby offering a dependable supply of economical, uniform quality cores. SONOCO's 60 years' experience, a completely integrated manufacturing operation and continuous research make these advantages possible.

SONOCO cores are made to exacting torque and crush strength specifications. Production is under rigid control from raw material to the finished core. Non-returnable cores are available in all sizes. Returnable cores, with or without famous SONOCO metal ends, are made in all standard sizes. SONOCO can also supply a complete line of metal end core machinery and core cutters.

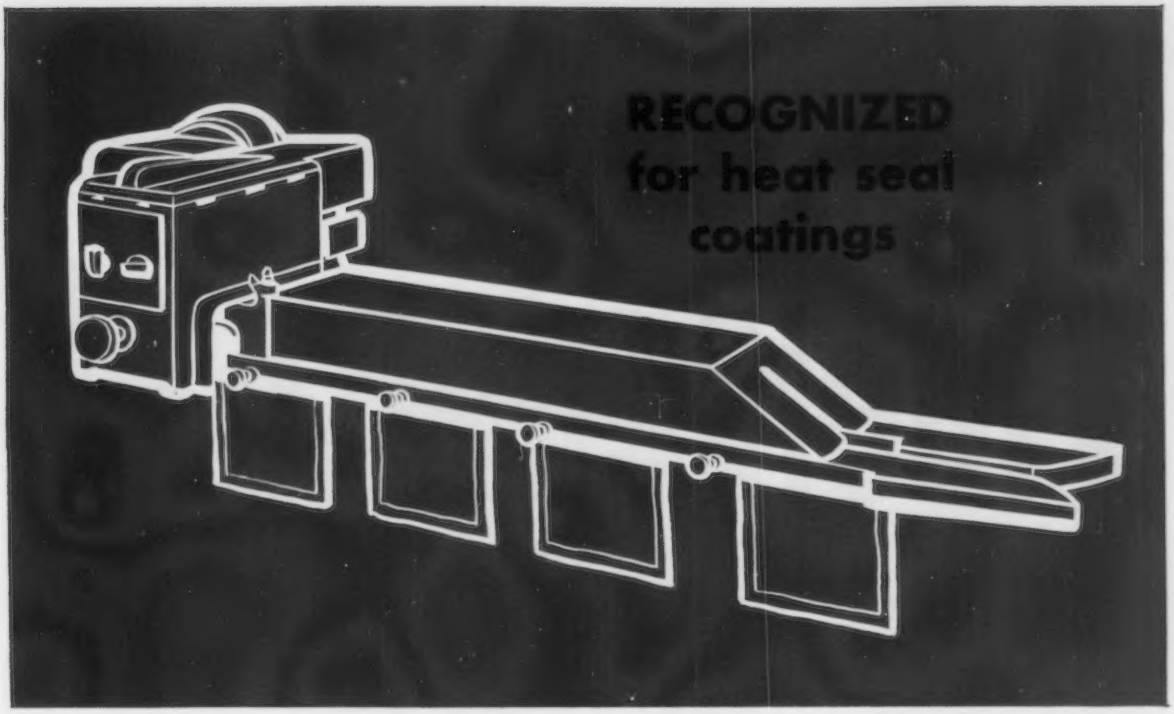
Regardless of your core needs, you'll get more for your core dollar from SONOCO in service, quality and economy. Call or write today!

SONOCO

Paper Mill Cores

SONOCO PRODUCTS COMPANY 1104

Main Office—Hartsville, S. C. • Mystic, Conn. • Akron, Ind. • Lowell, Mass. • Holyoke, Mass. • Phillipsburg, N. J. • Longview, Texas • Philadelphia, Pa. • La Puente, Cal. • Fremont, Cal. • Atlanta, Ga. • Brantford, Ont. • Granby, Quebec • Mexico, D. F.



Gelva® polyvinyl acetate emulsions

GELVA EMULSION PROPERTIES CHART

Type	S-55 Homopolymer Dispersion	TS-22 Homopolymer Dispersion	TS-30 Homopolymer Dispersion	TS-70 Copolymer Dispersion	TS-85 Homopolymer Dispersion	C-3 Alkali Soluble Copolymer Dispersion	S-51 Homopolymer Dispersion
Total Solids (min.)	55%	55%	55%	55%	54.5%	54.5%	55%
Emulsion Viscosity, cps	1100-1300	350-650	1200-1400	900-1300	1400-1700	700-1000	3000-3800
Heat seal temp of film, °F.	195-205	195-205	200-210	170-180	140-150	145-155	250-260
Mechanical Stability	Excellent	Good	Good	Good	Good	Good	Excellent
Freeze-Thaw Stability	Very Good	Good	Poor	Very Good	Very Good	Poor	Good

Whether it's a heat seal coating for glassine or for paper . . . or even vinyl chloride, there's a GELVA emulsion for your application.

Excellent adhesion to a wide variety of surfaces, superior compounding stability and machining characteristics, wide solvent tolerance and high bond strength are a few of the important advantages of Shawinigan's GELVA emulsions. The above chart presents physical properties of GELVA emulsions suitable for compounding heat seal coatings.

GELVA emulsions are available in a wide variety of grades and in any desired quantity . . . ready for shipment. Whether you need emulsions for pigment bindings, coatings, sizings . . . stability to light sensitive salts . . . water resistant coatings or molded pulp — you can get complete details by writing Shawinigan Resins Corporation, Dept. 7Q, Springfield 1, Massachusetts.

SALES OFFICES: ATLANTA CHICAGO LOS ANGELES NEW YORK CLEVELAND SAN FRANCISCO GREENSBORO ST. LOUIS

GELVA® *polyvinyl acetate resins by* **SHAWINIGAN RESINS**

Merfenel 51®*

*PACKED IN ONE AND TWO OUNCE ENVELOPES

A Tested Product

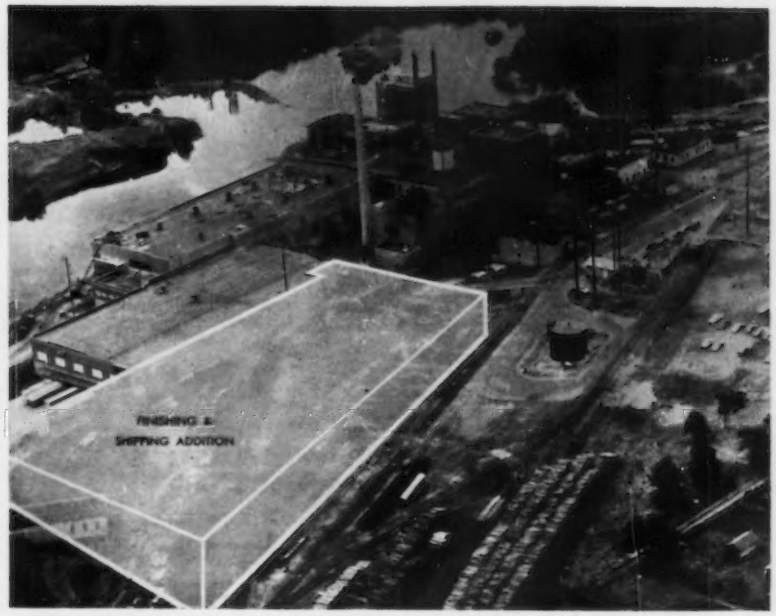
FOR
SLIME CONTROL
•
MOLD PROOFING
•
PRESERVATION OF
STARCHES AND PROTEINS

R. T. VANDERBILT CO. INC.

230 Park Avenue, New York 17, N. Y.

PAPER TRADE JOURNAL

WEEK OF AUGUST 15, 1960



OUTLINES SHOW SIZE of planned addition to finishing facilities. Present paper machine building is in center background. (roof being raised).

New P.M., New Finishing Part of Long Range Expansion Under Way at Wausau

Latest report from Wausau Paper Mills Co., Brokaw, Wis., about its multi-million dollar expansion and modernization program now in progress is:

• Installation of a new 124-inch fourdrinier paper machine is right on schedule and should be completed shortly after the first of the year. The machine is designed for 1500 f.p.m. speeds, with a production capacity of over 100 tons per day of fine writing, printing and business paper grades.

• A new roof is on the present three-machine room (which is also being enlarged to house the new machine), doubling its height. This will provide space for a new ventilation fan and ducts, lighting, two 17-ton overhead cranes, and new hoods for all the machines.

• Work has started on more than doubling the size of finishing and shipping facilities. Over 100,000 additional square feet will provide larger assembly area and increased facilities for loading 11 freight cars under cover and 18 semi-trailer trucks.

• A new boiler, designed primarily to supply power to the new machine is "on-line" producing over 50,000 lbs. of steam per hour. New four-story boiler feedwater treatment plant supplies over 27,400 g.p.d. to the boilers. The new 100,000 gal. fuel storage tank supplying the new boiler will go on standby when natural gas is cut in.

• Starch cooking and storage building has been completed.

• New stock preparation equipment is being installed, including a large Pulpmaster pulper, — 12 ft. deep, 32 ft. long, and 15 feet wide.

• Plans are also complete to make extensive renovation and modernizations on the sulphite pulp mill and bleach plant.

According to David B. Smith, president of Wausau Paper Mills, "it was necessary to instigate a long-range improvement and expansion program if we were to keep pace with the demands of the industry. . . . . While all this new construction and installation is in progress, we are under full production and are constantly shipping all that we can produce."

Southern Land Chooses Site for $42 Million Mill

Southern Land, Timber & Pulp Co. has announced its choice of a site for a $42 million pulp and paper mill in Georgia. Construction is scheduled to start by December. The location is on the Chattahoochee River near Cedar Springs, about 16 miles west of Blakely.

The tract of land has 1,700 acres and John Neely, Southern Land president, said it will take 18 to 24 months for construction. The mill, producing kraft linerboard, will have a capacity of 700 to 800 tons a day. The mill is to be built and owned by Early County, which will finance it by issuing approximately $50 million in revenue anticipation bonds.

Mr. Neely said actual construction cannot get under way until voters give approval to the bond issue in the general election in November. Southern Land, he said, will buy approximately half of the bonds, with the remainder to be sold at a public offering. The mill will be operated under a long-term lease with the country. Survey crews, however, will move into the area within two weeks to make site contour maps.

Expecting to draw timber from sections of southwest Georgia and southeast Alabama, the company also has over 500,000 acres of timberland owned by the company or controlled by its directors and stockholders.

Bowater Takes Over Swiss Paper Concern

The Bowater Paper Corp. has announced that its European holding company, Bowater Europe, S.A., of Brussels, has acquired a controlling interest in Paper Industries, Ltd., St. Moritz, a Swiss holding company which in turn controls two French companies — Les Papeteries de la Chapelle, S.A., of St. Etienne, in northern France, and La Cellulose de Strasbourg, S.A., of Strasbourg.

Les Papeteries de la Chapelle, S.A., operates a paper mill with five machines producing over the past 18 months 25,000 tons of paper of which two-thirds was newsprint and one-third fine papers.

La Cellulose de Strasbourg, S.A., operates a pulp mill with a total capacity of 70,000 tons of bleached and unbleached sulphite pulp annually.

Bowaters has already acquired four packaging plants, two in Belgium, one in Italy and one in France, all of which were considered to be capable of further development. Bowater also owns pulp mills in Sweden and Norway.

Bowater Europe's plans for further development include the erection of factories in Ghent, Belgium, and at Rheims, France.

Oxford Sells Timberlands To Province of Nova Scotia

Oxford Paper Co. has sold to the Province of Nova Scotia for approximately $3,750,000 a total of 396,000 acres of leasehold and 12,000 acres of freehold timberlands at Cape Breton, Nova Scotia, William H. Chisholm, president, has announced.

Cash received from the sale, Mr. Chisholm said, is substantially in excess of book value of the properties and will be applied to carry forward the company's important kraft program, due for completion in 1962.

After the sale, the company still retains approximately 400,000 acres of timber reserves with an estimated 2,790,000 cords of fir and spruce pulpwood on a peeled basis.

5th Deinking Conference Program Announced

"Deinking Today and Tomorrow" is the theme for the 5th Deinking Conference to be held at the Conway Hotel, Appleton, Wis., on October 5-7. J. D. Allen, Bergstrom Paper Co., Neenah, Wis., is general conference chairman.

According to M. R. Kinne, Sealright-Oswego Falls Corp., Fulton, N. Y., technical program chairman, there will be two technical sessions, one on the subject of "Economics of Deinking"; and one on the subject of "The Future of Deinking." The program follows:

"Economics of Deinking" — Moderator: D. B. Geffken, Sealright-Oswego Falls Corp., Fulton, N. Y.

"Waste Paper Supply" — A. N. McLeod, The Institute of Paper Chemistry, Appleton, Wis.

"Economics of Deinked Stock Usage vs. Virgin Pulp Usage" — J. L. Clouse, Oxford Paper Co., W. Carrolton, Ohio.

"Economics of Recovering in the Deinking System" — K. L. Maves, Bergstrom Paper Co., Neenah, Wis.

"Cost of Deinking?"—(Author to be announced).

"The Future of Deinking" — Moderator: J. C. Mills, Wyandotte Chemicals Corp., Wyandotte, Mich.

"Factors Tending to Increase Deinking Problems" — R. W. Kumler, Waste Paper Utilization Council, New York, N. Y.

"Practical Approaches to Solving Deinking Problems" — J. W. Morrow, Newton Falls Paper Co., Newton Falls, N. Y.

"What Can Basis Research Do" — Staff, The Institute of Paper Chemistry, Appleton, Wis.

"Growth in the Waste Paper Market" — H. J. Perry, Wilson, N. Y.

Champion Paper Buys Plants of B-L-H Corp.

Champion Paper & Fibre Co., Hamilton, Ohio, has purchased most of the Hamilton facility of Baldwin-Lima-Hamilton Corp.

Records in the Butler county recorder's office indicated the transaction involved almost $4 million. B-L-H transferred its operations to Eddystone, Pa., last spring.

Included in the purchase by Champion were four factory-type structures and two office buildings. Champion is expected to use the facilities for research and consolidation of storage areas and offices.

SPM Research League Increases Budget

Sulphite liquor research for stream improvement will be stepped up by 17 per cent immediately, top executives of the pulp and paper industry decided August 2 at a special meeting of the Sulphite Pulp Manufacturers' Research League Executive Committee.

Research budget of the League for the fiscal year starting August 1 was set at $185,465, up more than $25,000 from actual expenditures of the past fiscal year. The increase provides for adding a technical assistant and a laboratory assistant to increase the effective efforts of research section chiefs in developing several promising new processes now under investigation in League laboratories and pilot plants. The executive committee authorized for use in the new budget funds to be received from a voluntary assessment of $10,000 subscribed to the League by Consolidated Water Power & Paper Co. payable over a three-year period.

C-Z Reported to Have Selected Colo. Mill Site

Crown Zellerbach Corp. has apparently selected a site southwest of Kremmling, Colo., as the location of a new mill for manufacture of newsprint. Although the firm has not officially announced its choice of a site it has informed the Colorado Water Conservation Board of the decision.

Crown Zellerbach announced last year that if studies proved that a pulp operation utilizing spruce and pine from the area was feasible, a multi-million dollar plant would be built. At that time, the company said the plant would sell most, if not all, of its newsprint output to newspaper publishers in the Rocky Mountain region.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending July 30, 1960, at 91.2 per cent compared with 91.1 per cent revised, for the preceding week. The ratio was 94.3 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending July 30, 1960, at 94 per cent, compared with 91 per cent for the preceding week and 98 per cent for the corresponding week a year ago.

(Detailed Statistics on page 66)

PAPER PEOPLE

John Olewine

Asst. Superintendent Named at Nekoosa Mill

Nekoosa-Edwards Paper Co. has named John Olewine assistant superintendent of the Nekoosa paper mill.

Mr. Olewine, who assumed his new duties August 1, has been with Nekoosa-Edwards since October 1959 as manufacturing project engineer, working with managers of both the Nekoosa and Port Edwards mills. A graduate of Penn State University in 1948, Mr. Olewine was associated with West Virginia Pulp & Paper Co. as paper mill superintendent in Luke, Md., before joining Nekoosa-Edwards.

Georgia-Pacific Elects Directors

Stewart S. Hawes, president of Blyth & Co., Inc., of New York, and Robert E. Flowerree, Jr., president of Georgia-Pacific Paper Co., Portland, were elected directors of Georgia-Pacific Corp. at the August meeting of the board.

Mr. Hawes has served as president of Blyth & Co., Inc., since 1958, succeeding the late Charles R. Blyth, the founder of Blyth.

Mr. Flowerree replaces H. S. Daniels, who resigned as a Georgia-Pacific director and was elected chairman of Georgia-Pacific Paper Co.

The Georgia-Pacific board also elected John S. Brandis to the new office of senior vice president of timberlands and production. Previously he was vice president of the timber and logging division.

SFI Elects Berlin To Board of Directors

Richard E. Berlin, president, The Hearst Corp., and L. Emery Katzenbach, a general partner of White, Weld & Co., investment bankers, have been elected to the board of directors of Southwest Forest Industries, Inc., Phoenix, Ariz.

Mr. Berlin joined the Hearst organization in 1919 as an advertising salesman for Motor Boating magazine. Ten years later he was named executive vice president and general manager of Hearst Magazines. Since 1941 he has been president and chief executive officer of the far-flung Hearst enterprise.

Bender, Downington Paper Vice President, Retires

Warren L. Bender, vice president and sales representative for Downington Paper Co., retired on July 1, after 53 years of service.

Mr. Bender, who is 72 years old, began his long and colorful career on the basis of a "temporary" job in the company's paperboard mills in 1907. He worked his way up through the ranks in production and later entered the sales department as a company representative.

In June 1943, Mr. Bender was elected to the board of directors. Seven months later he was promoted to vice president. In recent years, he has been servicing customers in the Philadelphia area.

Champion Adds Montag To Board of Directors

All directors of the Champion Paper and Fibre Co., Hamilton, Ohio, were re-elected July 27 at the annual shareholders meeting, and a new director was added to the former nine-man board.

Named as the tenth director of the papermaking firm is Harold E. Montag, chairman of the board of Montag, Inc., Atlanta, Ga., a stationery and school supplies converting firm acquired as an independent subsidiary by Champion last March.

In addition to Mr. Montag, the new director, other directors are: Herbert W. Suter, Herbert T. Randall, Reuben B. Robertson, Lewis Clark Thomson, vice president and secretary; Dwight J. Thomson, chairman of the board; Harold B. Helm, Sidney Weinberg, Joseph B. Hall, and Carl R. Bendetsen, president.

J. E. Minch, Sr.

Minch Elected President, Howard Paper Mills, Inc.

John E. Minch, Sr., has been elected president of Howard Paper Mills, Inc., a subsidiary of the St. Regis Paper Co. He succeeds the late W. B. Zimmerman.

At the same time, the Howard board of directors named Archibald Carswell, executive vice president of St. Regis, to fill the board vacancy caused by the death of Mr. Zimmerman.

Mr. Minch joined Howard in 1930 and since 1949 has been vice president and director of sales. Mr. Minch will continue to make his headquarters at Howard's Aetna Paper Mill at Dayton, Ohio.

Westvaco Promotes Officials at Covington

Two officials of the West Virginia Pulp and Paper Co. bleached board division at Covington have been promoted to fill vacancies which were created by the retirement of Harold E. Miller.

E. K. Scholz, pulp mills department superintendent, has been appointed superintendent of the recovery department. And William D. Major, assistant technical director, has been appointed technical director.

Mr. Scholz, a graduate of Rensselaer Polytechnic Institute, has been with the Covington plant for 20 years. Dr. Major joined the bleached board division a year ago after a year's service with another manufacturer.

Fairbrother Retires from Champion P&F Post

Retirement of A. M. Fairbrother as vice president and manager of The Champion Paper and Fibre Co.'s Carolina Division at Canton, N. C., has been announced.

At the same time, the promotion of Willis Kirkpatrick from assistant division manager to acting division manager, Carolina Division, was announced.

Mr. Fairbrother, 55, a veteran of 25 years with Champion, has headed the Carolina Division since 1958. His decision to retire was accepted "with deep regret" by Champion's board of directors. Mr. Fairbrother said he had long planned to retire at 55 and anticipates extensive travel.

Mr. Kirkpatrick, new head of the Carolina Division, has been a Champion employe at Canton for 36 years. He started in 1924 as a painter and worked up through the traffic department, wood procurement, woods cost accounting, general accounting, the controller's office and management planning to positions as assistant to the division manager and assistant division manager. He became assistant to Reuben B. Robertson, chairman of the board and president at the time Reuben B. Robertson, Jr. resigned the presidency to become U. S. Deputy Secretary of Defense.

Personnel Director Named By Bowaters

Joseph O. Evans, formerly assistant industrial relations manager of Bowaters Southern Paper Corp., has been promoted to personnel manager.

Associated with the pulp and paper industry since 1935, Mr. Evans joined Bowaters Southern in May 1957 as labor relations supervisor. He was promoted to assistant industrial relations manager in January, 1959. Before joining Bowaters Mr. Evans was on the staff of the vice president in charge of labor relations, St. Regis Paper Co., New York City.

Stern Joins Gagliardi As Senior Associate

Egon Stern has joined the Gagliardi Research Corp., East Greenwich, R. I., as senior research associate.

Dr. Stern has approximately 20 years experience as an organic research chemist and did post-graduate work at the University of Vienna where he obtained his academic degrees. He has been associated with Onyx Oil and Chemical Co., Sun Chemical Corp. and Pittsburgh Plate Glass Co. During the past several years, Dr. Stern has been doing organic synthesis research at the Mellon Institute of Industrial Research.

The Gagliardi Research Corp. is an independent laboratory primarily devoted to research and development in resins and polymers for fibrous industries such as textile, paper, nonwovens, leather and wood.

O. T. Dalley

Celgar Appoints Castlegar Technical Supt.

Celgar Ltd., has appointed Owen T. Dalley, technical superintendent for its new bleached kraft pulp mill nearing completion at Castlegar, B. C. Mr. Dalley graduated with an M. S. degree from the University of Canterbury, New Zealand. He has worked as a process engineer in the heavy chemical industry in Australia and as research chemist for New Zealand Forest Products, producer of pulp, wallboards, hardboards, insulating boards and multi-wall paper sacks.

Mr. Dalley came to Canada as a lab supervisor and control chemist in the Ontario pulp mill of the Marathon Corp. of Canada, and for the past year, has been senior technologist for pulp mill process controls in Champion Paper & Fibre Co.'s North Carolina mill.

Celgar, Ltd., also has announced the appointment of Alexander S. Brokenshire as safety co-ordinator for its bleached kraft pulp mill, to be completed early in 1961 at Castlegar, B. C.

Mr. Brokenshire has been an employe of Consolidated Mining and Smelting Co. of Canada, Ltd., for the past 20 years, and for the past seven years was in the personnel department in Trail, B. C.

Oxford Paper V-P To Retire August 31

T. F. Spear, Oxford Paper Co. vice president in charge of public relations, will retire August 31, according to a company announcement.

He has been with the firm 41 years, first as assistant to the superintendent of the Rumford mill and later as mill manager. He has been vice president in charge of public relations since 1953.

Southern Pine Adds Four Division V-P's

At the regular mid-summer meeting of its board of directors, Southern Pine Lumber Co. created four new division vice presidencies.

The new officers are Clyde Thompson, vice president of the Forest Harvest Division; Kenneth Nelson, vice president for Land & Timber; J. D. Denman, vice president for Lumber Products, and Carrol Allen, vice president for Fiber Products.

The new promotions are made necessary by the continued expansion and intensification of Southern Pine's operation, it was stated, making it necessary to enlarge the responsibilities of key division heads.

D. G. McNair, vice president for retail is the only other division vice president, making a total of five.

Other officers are Temple Webber, chairman of the board; Arthur Temple, Jr., president and Latane Temple, vice president.

Stetz Is Advanced By Michigan Firm

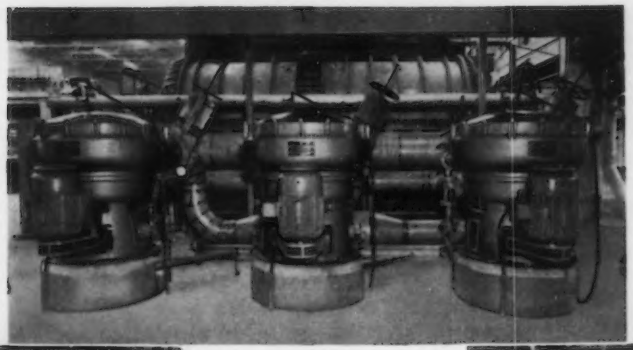
Stanley Stetz has been promoted to the newly created position of assistant to the senior vice president of Allied Paper Corp., Kalamazoo, Mich.

Mr. Stetz has been an Allied employe since 1946. He has been superintendent of Bryant Division Pulp Mill.

Allied is a major midwestern manufacturer of fine grade book and coated printing and publication papers.

Carey to Succeed Keady As Fibreboard President

William L. Keady, 67-year old president of Fibreboard Paper Products Corp., has announced that he is "relinquishing his duties" after eight years as chief executive. He will continue as a director and will



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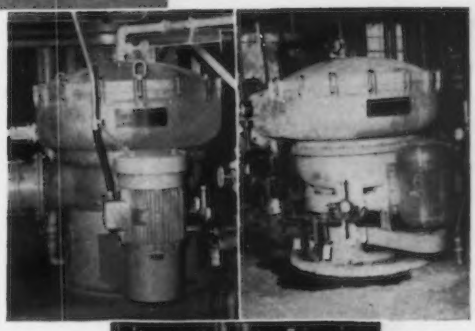

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be in charge of the company's foreign operations. Mr. Keady also announced that E. W. Carey, vice president-marketing, has been elected president and chief executive officer to take office August 26.

Mr. Carey joined Fibreboard in 1957, as vice president-administration. He was named vice president-marketing in January 1959 and was elected a member of the company's board of directors on July 21, of that year.

Bowaters Carolina Names Pulp Production Manager

George Jackson has been made pulp production manager of Bowaters Carolina Corp. at Catawba, S. C. He has been pulp mill superintendent.

R. A. Ashworth III formerly assistant pulp mill superintendent has been promoted to superintendent and Murphy Grantham has been made assistant superintendent.

Moyer Quits Post At C-Z Camas Laboratory

Resignation of Wendell W. Moyer, director of research for the Crown Zellerbach Corp. and head of the firm's central research laboratory in Camas, Wash., has been announced.

A report from Crown Zellerbach stated Dr. Moyer is resigning for personal reasons. He joined Crown Zellerbach in 1947. No announcement of a successor has been made.

The company reported Dr. Moyer, an authority in the carbohydrates industry, has played an important role in the post-war expansion of its research and development program.

OBITUARIES

Cecil F. Dawson, 67, former president of the Dixie Cup Co. and director of the American Can Co., died July 30 at Easton Hospital.

Mr. Dawson, a native of Hardin, Mo., was named president of Dixie Cup in 1948. He joined Dixie Cup as a salesman in Easton after he was graduated from William Jewell College in Liberty in 1914.

John Reed Draper, Sr., 73, of West Groton, Mass., retired paper manufacturer, died August 4.

Charles Ehlen, Jr., 80, retired secretary of the Gibson Art Co., Cincinnati, Ohio, died July 27 at his home. He retired from the greeting card firm in June, 1956.

Mr. Ehlen's career with Gibson Art spanned 60 years.

Fred L. Essicks, 58, founder of two carton manufacturing firms, died of a heart attack August 1.

In 1948 Mr. Essicks founded the Superior Box Co., a firm which specialized in the production of wooden cartons. He was its president. Four years later he founded Superior Container Co., for the manufacture of corrugated cartons. He served that company as treasurer.

John G. Fleming, Sr., 58, an executive of Fleming and Sons, Inc., died August 5 at his home in Dallas, Tex. Mr. Fleming was chairman of the board and vice president of the company. A native of Dallas he attended Notre Dame and the University of Texas.

Thomas Wolcott Little, 68, former treasurer and director of the Bemis Bros. Bag Co., died August 5 at his home in Belmont, Mass. He was associated with the firm more than 40 years before his retirement in 1959.

Mr. Little was graduated from Trinity College in 1914 and from Massachusetts Institute of Technology, in 1916.

Harry A. Jacobs, 83, founder and first president of the Franklin Paper Co., Philadelphia, Pa., died July 30 at his home in Ocean City, N. J. Mr. Jacobs headed the paper firm from its inception in 1920 until he retired in 1952.

William F. Thiele, 73, director and vice president, Consolidated Water Power & Paper Co., and president, Wisconsin River Power Co., died August 4 at Riverview Hospital where he was admitted August 3 following a heart attack.

On receiving a B.S. degree in electrical engineering from the University of Kansas in 1909, Mr. Thiele joined General Electric Co. He came to Consolidated in 1920 as chief engineer. He was re-elected director and vice president of Consolidated the week before his death.

Mr. Thiele was former president of the Draper Paper Mills of Skaneateles Falls, N. Y., and former general manager of the Carthage Pulp and Board Co. of Carthage, N. Y. At the age of 29, he was president of the Buck Run Paper Co. in Pennsylvania.

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PTJ NEWS OF CONVERTERS

H&D Purchases Plant Site in Moncton, N. B.

Construction of a $1,750,000 corrugated shipping container factory in Moncton's Atlantic Distribution and Industrial Center will begin immediately, officials of Hinde and Dauch Ltd., a subsidiary of St. Lawrence Corp., Ltd., have announced.

A 12-acre site for the large plant has been purchased in Moncton, N. B., west end industrial area and tenders for the new building are expected to be let within the next day or two. When completed the new plant will employ more than 100.

The new plant, which will occupy a total area of 70,000 square feet will be located on Baig Boulevard. Future plans visualize this unit acting as a central distribution point for other packaging materials manufactured by both Hinde and Dauch and the St. Lawrence Corp.

The Moncton plant will manufacture a full line of corrugated boxes, sheets, pads and partitions, and thus will be in a position to supply industry with corrugated shipping containers and other packaging materials for the many types of products manufactured throughout the four provinces.

Lloyd Becomes President Diamond Gardner Division

Calvin F. Lloyd has been promoted to president of the Gardner Division of Diamond National Corp., succeeding Richard L. Siegel who has resigned to take an executive position with a pulp and paper manufacturer.

Mr. Lloyd joined the former Gardner Board & Carton Co. in Middletown, Ohio, after graduation from high school 30 years ago. Starting as a cost clerk, he rose through various finance positions to assistant treasurer and assistant secretary in 1951. He became treasurer a year later. When Gardner merged with the Diamond Match Co. in 1957 to form Diamond Gardner Corp. (now Diamond National) Mr. Lloyd was named divisional controller, the position he held until becoming assistant to the president last year. He attended University of Cincinnati Evening College and received his law degree from Chase College of Law in Cincinnati.

The Gardner Division produces paperboard and folding cartons. Besides these products, Diamond National also manufactures printing and advertising materials, egg cartons, molded-pulp items, lumber, matches and woodenware.

Sorg Paper Buys Groff Paper Co.

The capital stock of the Groff Paper Co. of St. Paul, Minn., has been purchased by the Sorg Paper Co., according to D. G. Driscoll, president of the Middletown, Ohio, firm. Mr. Driscoll said the acquisition of Groff Paper is an additional step in Sorg's planned integration program.

Groff Paper, one of Sorg's customers for a number of years, converts facial tissue paper into quality products, including napkins, guest towels, wipes, barber and medical towels and household dusters. The firm is 40 years old.

Con. Can Names N.Y. Folding Carton Sales Manager

E. Garfield Gifford has been appointed New York district sales manager for folding cartons in the Boxboard and Folding Carton Division of Continental Can Co. Mr. Gifford, who has been district sales manager in Philadelphia, replaces C. S. Reid, who has retired.

Mr. Gifford started with the premerger Robert Gair Co. in 1937 and served as a folding carton salesman in Pittsburgh, Cleveland and New York, before assuming his last position. He will be replaced as Philadelphia district sales manager by Nils Hansen, formerly a salesman in the Syracuse district.

Darwin Cranmer becomes boxboard district sales manager for the company in Elkhart, Ind., succeeding Donald J. Ball who is taking a position outside the industry.

Pulp Paper and Board Mill Maintenance

Based on actual in-plant experience and prepared by well known men in the paper industry, this 126 page book brings you in easy to read language procedures for plant maintenance of kraft mills, semi-chemical mills, bleach plants, fourdrinier and cylinder machines, stock preparations equipment, and other machinery used in pulp and paper making. Price $2.50.

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German Technical Meeting

Features Highly Theoretical Program

. . . But papers on dryer drainage, filler retention and stock preparation instrumentation are of great practical significance.

Ernest F. Barker,
European Editor,
Paper Trade Journal

The annual meeting of the Verein der Zellstoff-und-Papier-Chemiker und Ingenieure, the German equivalent of TAPPI, was held June 27 through July 1 in Garmisch-Partenkirchen. Zellcheming operates many technical committees in which important work is carried out, primarily on the practical aspects and problems of pulp and papermaking. The proceedings of the annual meeting tend on the other hand, to be more on research and theoretical aspects.

The Association honored Prof. Walter Brecht (for almost 30 years director, Institute for Papermaking, Technische Hochschule, Darmstadt, Germany) on the occasion of his 60th birthday. Prof. Brecht, internationally famous for his many research projects and papers in the industry, is especially well known for his activities in the U.S., where he was at one time associated with Hammermill Paper Co.

19 Papers Presented

H. Ruck, Burg Gretesch, "Swelling of Native Cellulose."

M. Rebek, Graz , "Determination of Carboxyl Groups."

J. Schurz, Graz, "Scattering of Light and X-Rays in Solution of Cellulose Derivatives."

H. Klare, Teltow-Seehof, "Me-

Dr. H. Mueller-Clemm, association president, presents Mitscherlich medal to B. Steenberg (left).

Prof. Walter Brecht shown immediately after he received a 60th birthday gift. (He's an ardent fisherman.)

chanism of Viscose Spinning."

D. Hamburger Dusseldorf-Ober-Kassel, "Comparative Tests, with Different Deforming Agents."

S. Rydholm, Saffle, "Multi-Stage Cooking."

H. Bucher, Attisholz, "Topochemistry of Disintegrated Wood."

G. Jayme and G. Hunger, Darmstadt, "Stereo-electrone-optical Examination of Pulp and Paper."

W. Brecht, Darmstadt, "Finish (handle) of the Paper."

B. Steenberg, Stockholm, "Demulsification Investigations of Water Pulp Suspensions."

L. Nordman and Phil P. Aaltonen, Helsinki, "Investigation of Methods for Characterizing the Degree of Beating of Pulp."

T. Holte, Oslo, "Test Method for Quantitative Determination of Dust on Paper and Board."

W. Brecht and A. Pohl, Darmstadt, "The Aging of Papers and the Effects Produced."

K. H. Klemm, Dachau, "The System of Instrumentation of New Stock Preparation."

W. Barnscheidt, Dusseldorf, "Investigations into Water Removal from the Drying Cylinders Taking into Consideration Heat Exchange and Power Consumption."

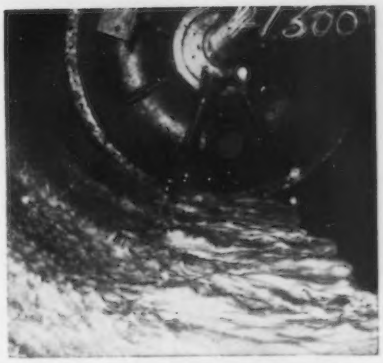
W. Brecht and W. Hildebrand, Darmstadt, "New Investigations into the Permanence of Flatness of Papers."

G. Jayme and W. Denmig, Darmstadt, "The Retention of Various Starch, CMC and Alginate-Type Materials on the Paper Machine Wire."

L. Scheuring and C. Zehender, Munchen, "The Oxygen Consumption of Different Water Soluble Polysaccharides in Paper Mill Waste Water."

W. Brecht and F. Zippel, Darmstadt, "The Basic Systems of Waste Water Recirculation in Paper Mills with Respect to their Appropriate Use."

The 3 papers of greatest interest to readers, because of their practical significance, are summarized here.



"Sump" condition of condensate.

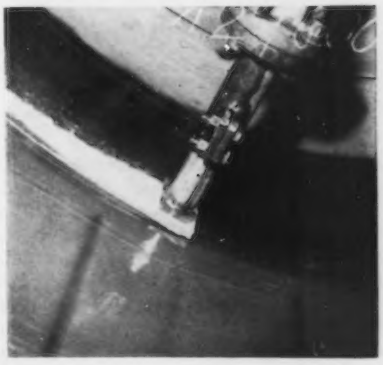
"Ring" condition of condensate.

Dryer Drainage Problems

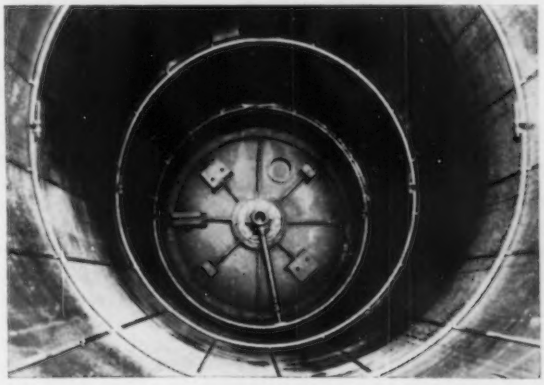
W. Barnscheidt of the Feldmuehle, Dusseldorf, delivered a paper entitled "Water Removal Methods for Drying Cylinders with Respect to Heat-Exchange and Power Requirements." The work described in this paper was a joint project of J. M. Voith, paper machinery builder of Heidenheim, Germany, and the Feldmuehle, Dusseldorf, one of Europe's largest paper mills.

Rather than work with pilot plant equipment, this experimental work was performed with a steam-heated drying cylinder of normal size, 196-inch face and 5-foot diameter. Purpose of the work was to determine the conditions under which heat transfer resistance between the interior of the dryer and the dryer surface is smallest. In the experiments, dryer surface temperature, amount of condensate and amount of steam passed through the cylinder were measured carefully.

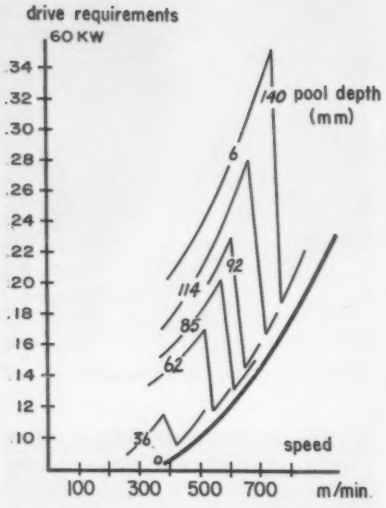
The work differentiates between two condensate conditions: condensate sump or pool and ring (or "rimming" as it is often called in the United States) conditions. The sump condition requires high driving power and has relatively low resistance, while the reverse conditions exist with the water ring. This was shown clearly by mounting a camera inside the experimental dryer while the work was in progress. Photographs showed the ring forming speed and the condensate performance difference between the sump and ring conditions, especially at high speeds. It was found that the drying cylinder diameter is not an important factor. Rimming did not occur under speeds of 1,150 feet per minute. Under normal circumstances the rimming occurs between 1300 feet and 1,650 feet per minute. The ring collapses at lower speeds and this is called "the collapsing speed," which lies considerably below the ring formation speed. The water ring performs a swinging movement relative to the bottom of the dryer. Reason for this is gravity which alternately slows down and speeds



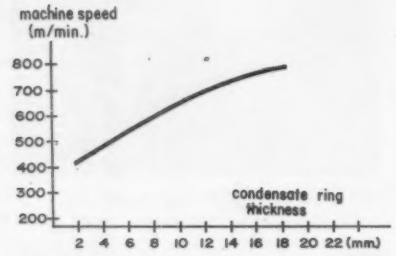
New design siphon. (Distance from dryer inside surface is 4 mm.)



Metal rail installation inside dryer.



Drive requirements depending on machine speed (with dryer felt—no doctor).



Speed of condensate ring formation, relative to ring thickness (with dryer felt—no doctor).

up the water ring.

In practice the rimming speed is considered much more important than the collapsing speed. When operating at speeds under 1,300 ft. per minute, the sump condition usually results, while speeds above this usually achieve the rimming condition. The borderline depends greatly upon the construction of the condensate removal siphon and also of course on the amount of steam. The greater heat transfer under the sump condition, therefore, unfortunately cannot be utilized at high speeds, about 1,475 ft. per minute.

With the sump condition, condensate removal can be achieved by stationary as well as rotating siphons and also with dippers. With the ring condition, however, only stationary or rotating siphons can be used for condensate removal.

At start up, the siphon pipe is heated immediately upon coming into contact with steam. Because of heat expansion there is the danger at the time of the initial heating that the siphon will touch the dryer wall and for this reason there has to be a minimum space of 0.08 inches between the siphon and the dryer wall.

The old conventional, curved siphons were used at the company's Reisholz mill on a newsprint machine, and there it was found that aside from the obvious disadvantages of danger of break-off, there was another considerable disadvantage: no real vacuum effect. At a 0.08 inch distance between the siphon and the cylinder wall, a 0.08 inch thick water ring was observed. Based on this experience, in a new siphon design, consideration was given and allowance was made for condensate entry into the siphon. It was soon found, however, that this was unnecessary. It was found that at a 0.2 inch distance between siphon and cylinder wall, the same dryer surface temperatures were achieved as when the distance was shortened to 0.08 inch. Another interesting phenomenon discovered was the formation of a type of condensate vortex which formed rather easily when the siphon was submerged in the water ring. This "vortex-wave" travels, disturbs the water ring and can lead to uneven temperatures along the drying cylinder face. In case of thin water rings this danger is small because the vortex-wave spreads less in such a case.

Rotating siphons turn with the cylinder and for this reason can be fastened to the cylinder floor. Here problems of touching the cylinder at start-up do not exist. The disadvantage is the high pressure difference which occurs with water removal against the centrifugal force.

It was also discovered (despite previous experiences to the contrary) that no appreciable cooling occurred when the condensate valve was closed. Even after quite some time and after the water ring had risen considerably, no appreciable cooling was noted. Further investigation showed that the water ring moves in a back-and-forth motion relative to the cylinder floor. A series of metal strips (or "rails") were then fastened to the inside surface of the dryer cylinder. This resulted in the creation of water dams. These dams create a series of surface waves and considerable work was done on this. The optimum number and size of metal strips was calculated and determined. It was found that a rail of 0.4 inch height is sufficient. Eighteen such rails were determined as the optimum number. Thus, a water ring, 0.11 inches in thickness was photographed at a running speed of 1,080 f.p.m.

Two special points were made with regard to the addition of such rails: (1) The water ring formation speed is reduced considerably; (2) the power requirement for driving the dryer is increased approximately ten per cent. This means that with a relatively small increase of the power requirements, almost the same dryer surface temperatures are achieved in those situations when the much more preferable condensate sump condition exists. The dryer surface temperature is not dependent on the thickness of the water ring, it was also found.

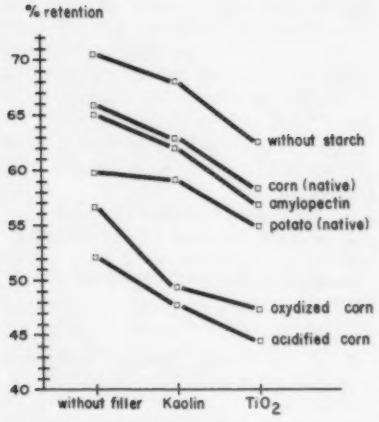
Wire Retention Studies

"The retention of various starch, CMC and alginate-type materials (proteinaceous materials) on the paper machine wire," was the subject of a paper presented by George Jayme and Werner Demming, of the Cellulose-Chemistry Institute of the Technische Hochschule at Darmstadt.

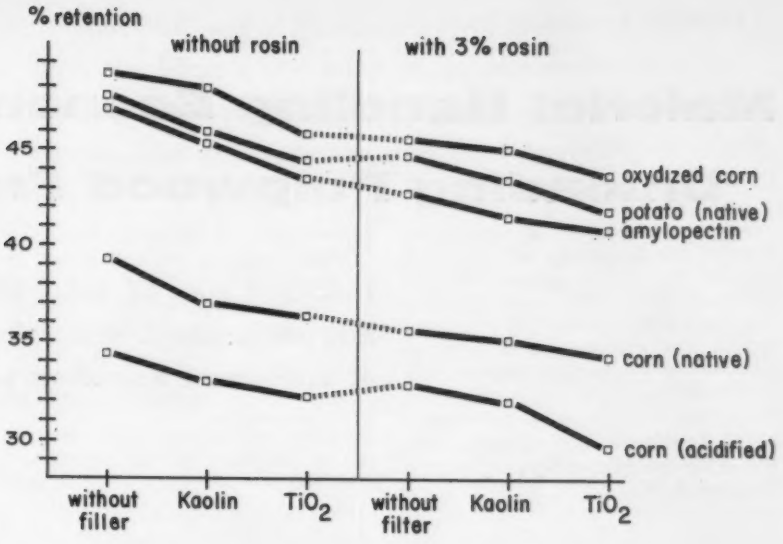
Here are the highlights of this paper: The quality of white water generally depends on three factors; (1) Suspended solids; (2) concentration of toxic substances; and (3) concentration of oxygen-demanding substances. Among the substances of particular importance is rosin size. It has been shown in the past that the rosin size content of white water is usually small. This changes however when titanium dioxide and starch are present at the same time.

% RETENTION OF FILLERS

	without Rosin		with Rosin	
	Kaolin	TiO_2	Kaolin	TiO_2
NaCMC, Alginate without starch	64.3	59.0	67.0	63.6
Corn (native)	47.9	39.6	51.2	43.7
Potato (native)	43.3	34.0	44.6	38.2
Low Viscosity Alginate	75.0	70.5	73.0	67.1
High Viscosity Alginate	76.2	71.8	73.0	66.8
Low Viscosity NaCMC	68.3	67.3	68.0	65.2
High Viscosity NaCMC	72.9	68.0	69.8	65.6



▲ ROSIN RETENTION



In experiments reported in this paper, the influence of kaolin, titanium dioxide and rosin size on retention at the paper machine, were determined. Among the variables which can affect retention on the wire are: type of pulp in the furnish, consistency, pH, degree of stock treatment, speed of water removal and amount and types of various additives. The last is an important factor.

In the experimental work described in this paper, bleached pine sulphite pulp was used. The following additives were investigated: three per cent starch, sodium salt of carboxymethylcellulose and sodium alginate. The experimental furnish contained ten per cent filler and three per cent rosin size, all based on bone dry pulp. The consistency was five grams per liter and pH was 4.8, controlled with alum. The experiments showed that the retention of alginate on the paper machine wire was at least 90 per cent under the laboratory conditions and that chain length of the material and the presence of various fines usually found in the furnish, have no particular influence on the retention. The same was found for CMC, where retention of over 75 per cent can be called relatively good. Maximum retention of starch amounted to approximately 48 per cent and was very dependent upon the type of starch. Fillers and rosin size in each case lowered retention. The retention lowering influence of starch and titanium dioxide on rosin size was again proven. Filler retention is lowered by starch while alginate and CMC assist retention of fillers. Aside from retention on the wire, retention ability of the saveall is of extreme importance when considering the retention of the entire white water system. The retention at the wire and the retention at the saveall are not necessarily related. Thus, while the retention on the wire is small with the use of corn starch, the losses at the saveall (of the starch and fines) are smaller than when potato starch is used. In this case, the lower retention on the wire is made up for by the higher retention ability of the saveall. (The accompanying graphs show the details of the work described here.)

Stock Preparation Systems

K. H. Klemm, of the Muenchen-Dachauer Papierfabriken, presented a paper on "System and Instrumentation of a Modern Stock Prepation System." (Dr. Klemm is, incidentally, no stranger to our North American readers. He is the author of the book "Mechanical Pulp Manufacture," published in 1958 by The Lockwood Trade Journal Co.)

Dr. Klemm first presented a brief review of the development of the continuous stock preparation systems.

Modern continuous stock measuring methods were first developed in the U.S., using metering wheels for mixing the various furnish components. The most modern systems now use electrical flow meters and one of the first plants that has installed such a system in central Europe (Muenchen-Dachau Papier Fabriken) was described. A basic requirement of any continuous stock preparation system is absolute constant consistency of the furnish components. This is achieved in this mill with double-consistency regulations for ground-wood, chemical pulp and broke and with careful batch-control of clay, size, alum and colors. The fibrous components and clay are proportioned by flow meters and the size and the colors by metering pumps. The percentage of broke furnish added directly to the very small machine chest is set according to the level of the broke chests. In addition it is set according to the signal from the flow meter for the total flow to the paper machine.

The paper also described details of the automatic systems for slushing chemical pulp, the preparation of groundwood, and the slushing of clay. Automation of the broke handling system was also described. The stock preparation plant was built primarily by Black Clawson International in cooperation with Foxboro Yoxall.

Material Handling Economics of Unloading Pulpwood From Rail Cars

Pros and cons of using the various types of railroad cars are itemized. Actual data are presented on the costs of mechanical unloading versus hand unloading.

H. N. Bartley,
Great Northern Paper Co.,
Millinocket, Me.

The Great Northern Paper Co. receives approximately 23 per cent of its total supply of wood by water, approximately 19 per cent by truck; and finally, 58 per cent, or 444,000 cords, by rail. Rail-delivered wood is on the increase due to improved shipping and unloading facilities. Among the species handled by rail deliveries are the following: Rough and peeled spruce, peeled hemlock, peeled poplar and peeled hardwood (birch and maple).

The bulk of all the rail deliveries fall in the four-month period from December through March. During this time unloading facilities and storage areas are jammed to capacity and many times beyond their capacity. The hardwood and poplar go to the East Millinocket mill, the peeled spruce and hemlock to the Millinocket mill and the rough wood to the Cape and North Twin storage areas. So we have at least four major areas for rail unloadings.

Five Types of Rail Cars

The following are the 5 types of cars that we encounter at our unloading stations: First, the old fashioned box car; second, the open top box car or the so called 3500 series; third, the steel rack; fourth, the open top dump; and last and newest, the end-rock dump car.

The Bangor and Aroostook Railroad has the following number of cars of the aforementioned types available for pulpwood loading:

Steels	24
3500 Series	100
Regular Dumps	263
End Rack Dumps	266
Boxes	30

This gives a total of 683 cars. The B & A expects to convert 100-150 of the regular dumps over to the end racks this summer.

Pros, Cons of Each Type

Let us now take each type of car and analyze the advantages and disadvantages of each.

First we will consider the **box car.**

Advantages
1. No loss of wood in transit.
2. Do not fill with snow in winter.

Disadvantages
1. Must be loaded and unloaded by hand, is more expensive.
2. More difficult to unload by hand than the other types.
3. Difficulty in accurate scale, discount, mixed species, etc.
4. Difficulty and danger in opening doors.
5. Must use drop cords for lighting on night shift.

Next let us look at the **"steels".** (Mostly for logs).

Advantages
1. Can be loaded mechanically.
2. More easily scaled.
3. Easier to unload by hand and cheaper.
4. No wood loss in transit.

Disadvantages
1. Can be unloaded mechanically but best by hand.
2. Exposure to elements make winter unloading difficult.
3. Costs more to unload than dumps.

Next the **3500 series.**

Advantages
1. Wood can be tumbled-in or crane-loaded if done with care.

Disadvantages
1. Must be hand-unloaded.
2. Fills with snow.

Next the regular **two-door dump cars.**

Advantages
1. Wood easily loaded and unloaded mechanically, tumbled-in or piled-in.
2. No wood loss in transit.
3. Ease in loading and unloading quick turn around (24 hours).

Disadvantages
1. Fills with snow in winter, picks up gravel from storage areas in summer.
2. Trouble with big and small doors.
3. Hard to scale.
4. Limited to pulp and some sulphur.

Last, the new end rack dump cars. We have left these until last because they are the best at present.

Advantages
1. Cheap to build and maintain.
2. Easy to scale.
3. Easy to unload the year around.
4. Do not build up with snow or gravel.
5. Cheapest car to unload.

Disadvantages
1. Loss of wood in shipment.
2. Some crane operators dislike because it takes longer and more care to load (holds more wood).
3. Only hauls pulpwood.
4. Break existing ramps.

Cost Advantages

Let us now look at some cost figures that show the advantages of the various types of cars and unloading.

The wood that is hand unloaded in the mill yards is done by the hour. All hand unloading done by the Woodlands Department is done on a piece-work basis. Every unloader must, after a breaking-in period, better the daily rate or he is not kept on as an unloader. Our current rates for unloading are $.40 per cord for boxes and $.33 per cord for others. Our common labor rate is $1.75 per hour and that of the mill is $1.92.

Now if we forget fixed charges and consider only the difference in labor rates we have a difference of $.07 per cord for box cars over steels and dumps. Some men can unload five, six and up to seven cars a day but the average would be near three and the minimum two cars. A man must unload 35 cords of the $.40 wood or 42 cords of the $.33 wood or any combination of the two up to a minimum of $14.00, which constitutes a day's pay.

In order to unload 50 cars by hand daily we would require, in addition to our regular overhead, a locomotive operator, brakeman, etc., and the services of 15 to 18 cord unloaders. By adding one hydraulic car dumper we are able to unload up to 100 cars in nine hours or 11 cars per hour.

The difference in unloading costs is only one small part of the cost that can result from inadequate unloading facilities. We must maintain a balance between loading and unloading. You cannot unload 220 cars a day while you are loading 300 and keep your cost down. If you have too many empty cars available then you will overload your delivery points and demurrage will run your costs sky high. If you have a fixed number of cars then the shippers could be caught short at the sidings and the whole woods trucking operation is tied up. A happy medium is a must but it is often hard to obtain.

The use of the dump cars has enabled us to unload 150 cars a day mechanically and get these cars back to the shipper the next day. It is not uncommon to unload the same car three times in the same week.

In 1950, we constructed a mechanical dumper at Cape Siding at a cost of $97,279. This included $7,828 for a locomotive house. The breakdown of this cost was: grading $13,081; track work $14,706; electrical transmission line $4,471; mechanical dumper $54,500 and miscellaneous $2,700.

"When mechanical dumps are used to unload railroad cars, the biggest and most important factor in determining the volume and speed of unloading is the carrier that removes the unloaded wood."

Influencing Factors

Some of the factors that influence the number of cars possible to unload on these mechanical dumps are:

1. Switching and physical limitations. The capacity of the switch engine determines the number of cars to be carried to the dumper at one time.

2. Visibility. The locomotive operator should be able to see the signals of the brakeman setting the cars on the dumper. A two-way radio might correct a situation contrary to this.

3. Size and convenience of sidings. We have one siding that limits our switching and dumping to five cars at a time. The other will handle more than double this amount. This saves time for dumping that is used up in bringing in loaded cars and dispersing of the empties.

4. The biggest and most important factor in determining the volume and speed of rail wood unloading is the carrier that removes the unloaded wood. In our case both of our car dumps are situated on the river bank. This is an ideal situation. In one area we can store 90,000 to 120,000 cords and the second area approximately 50,000 to 75,000 cords. A water carrier of this type is ideal except during the periods of extremely cold weather when heavy formations of ice prevent the wood from filling the available space. At North Twin we can crowd this jam of wood and ice down into the lake by opening the waste gates of the dam above and flushing the river. The success of such an operation depends on the amount of ice present and the amount of flow available.

The conveyor where we unload our hand cars can accommodate nine cars on a side or 18 cars at a time. These cars are unloaded into a button and cable conveyor, which handles this number of cars nicely. The wood drops directly into the river just up stream from car dumper. When our water storage area is filled we have to fall back on an antiquated stacker that is plain torture after the first 5,000 cords.

Unloading in Winter

In spite of the dump cars and hydraulic lifts, unloading gets to be quite a problem during the winter months. Most of our wood is crane-loaded. This means that the peeled wood gets loaded into dump cars. Since the mill has to unload peeled wood by hand only half of the potential of these cars is being utilized. When there are no dump cars available for rough wood it may get loaded into box cars that must also be unloaded by hand. So we have a complete reversal of all our advantages. We, together with the B & A do our best to keep this situation to a minimum. This year the mill at Millinocket is revamping their entire rail unloading facilities in order to fully utilize the end racks.

They will have four eight-car sidings with a flume between each set of two tracks. A version of the "grade-all" will pull the wood from the end rack cars into these flumes. They will also be able to unload some of the side delivery trucks in the same manner.

To summarize this problem briefly one would say that at this time the most economical pulpwood car, both for loading and unloading is the end rack dump cars. We save approximately $9.00 per car on the dump cars over the hand-loaded types. Keep a good balance of cars between shipper and unloading so as to keep the woods operations moving as rapidly as possible, and yet not overload your unloading and storage areas. Concentration yards on rail sidings may be necessary to keep this balance.

"At this time, the most economical pulpwood car, both for loading and unloading is the end rack dump car. We save approximately $9.00 per car on these dump cars over the hand-loaded types."

Paper presented at Spring Meeting of Maine-New Hampshire Section of TAPPI, June 17, 1960.

Developments in Headbox Slices and Perforated Roll Design

H. A. Brewden and B. Locking

Years ago, the pioneer patent of Lang (38) introduced the projection slice as we know it today. This design is indicated in Figure 34 and a modern form of the same principle in Figure 35. The major difficulty in this design can be seen from Figure 34, that is, the discontinuity at the hinge which causes vortices and possibly a place for lump and floc formation. In the modern design, as indicated in Figure 35 this difficulty has been overcome but the construction is not simple and the feather edge of the moveable lip is very delicate if the box for any reason has to be dismantled.

The other type of projection slice that has been extensively used is the curved construction of Van der Carr (39), and a modern type of this is illustrated in Figure 36.

This type of slice is apt to give a flow that "skates" on the wire when over-adjusted and thus, at higher speeds, flow may be such as to give light spots in the paper. In general, the direct straight type slice descended from the Voith is preferable provided that the actual construction is suitable.

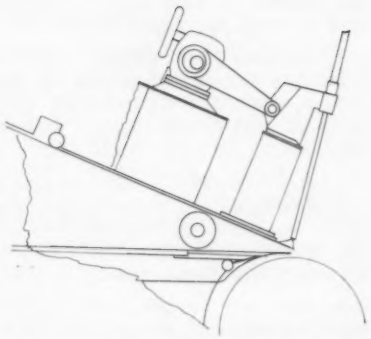


Figure 35: Modern construction of Voith type slice.

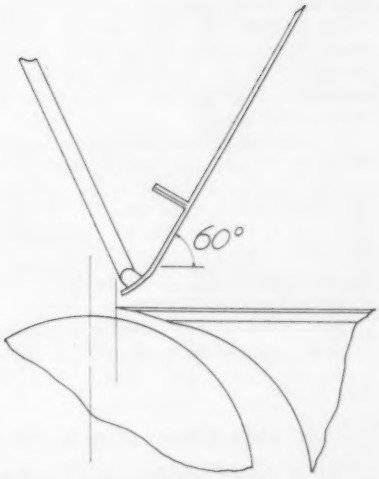


Figure 36: Van der Carr type slice.

Figure 37 shows the construction of Reitzel, (8), and represents an attempt to obtain the flow advantages of the straight slice with the design advantages of the curved upper lip. The disadvantage of this construction is that there is a discontinuity where the flexible blade joins the top lip proper, and this may pick up material and cause the release of lumps and air bubbles.

One of the few new slice designs is due to C. A. Lee; it is, in effect, a straight type top lip with a deliberate and sharp discontinuity at the end. The object of this is to introduce micro turbulence immediately before the stock issues out on to the wire. The disadvantages of the construction is the reduced flexibility and adjustability of the lip if the construction is all in one piece.

Figure 38B illustrates a development of this idea now in wide use as a method of converting slices of the converging type, especially on older and slower machines to vertical type closed.

Figure 38C shows a similar construction in so far as the effect on the flow is concerned, but instead of the slice construction being obtained by warping of the top lip,

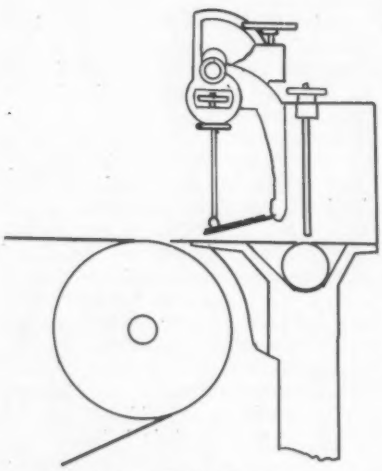


Figure 34: Original Voith slice.

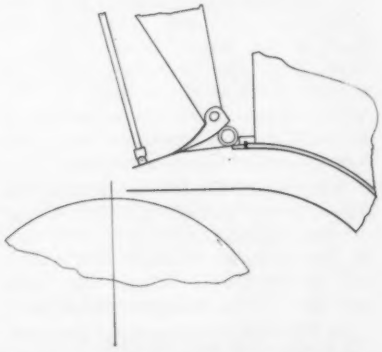


Figure 37: Blade connected slice (Reitzel).

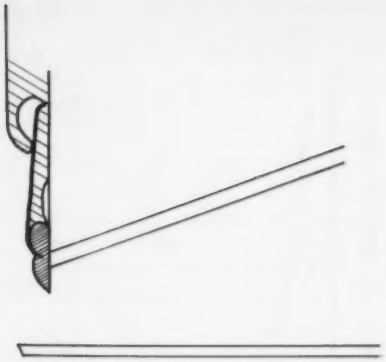


Figure 38A: Converging slice with vertical end piece as used for news and book papers.

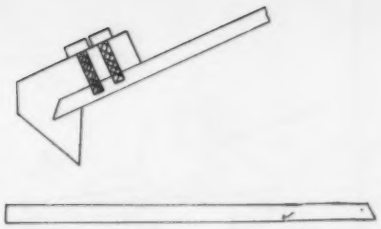


Figure 38B: Adaptation piece for converting older converging lips to vertical type.

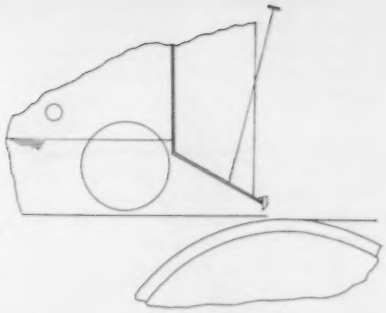


Figure 38C: Combination converging and vertical slice as used on high speed kraft machines.

the vertical end piece is of the type described in the next section and is warped for adjustment in the same manner.

Figure 39 is an illustration of the blade type vertical top lip as commonly used in the rectangular air loaded boxes described previously. The actual slice is the vertical blade of shape as shown held in position by a series of strong spring clips and flexed by means of a compound lever arrangement worked from the adjusting screws. This type of slice has no actual advantage over the projection slice and has the severe disadvantage that, if over adjusted, then an adjustment at one part of the machine can release tensions some considerable distance away. It is thus possible to overadjust the slice to a degree where it is difficult to satisfactorily run the machine. The blades need changing with a frequency of about twice a year as they become distorted and then the tendency referred to above is accentuated. If the machine operates with hot stock the slice blade should be ground shorter in length than the slice width across the machine to allow for expansion and prevent buckling with hot stock.

The idea generally held that vertical slices of this type give a more even discharge on to the wire because of the greater contraction coefficient (approx. 0.7 as compared to 0.95 for the projection type) has no foundation. Streaks and irregular discharge can occur just as easily as with the older designs: since these slices are commonly run in such a position as to obtain a discharge at the breast roll or, else are in use on a new machine with ample drainage capacity on the table roll section, the sheet is often dryer at the first flat box than with the projection type and consequently the idea has grown up that these slices give a more even dry line at the flat boxes and thus a more even cross direction basis weight. This is again without foundation and the newer designs of the older types give a comparable or better performance.

In a recent paper by Muller-Rid and Pausch (40) measurements in the slice jet with pitot tubes are described for slices of the converging type, straight blade type, and combination blade and converging type. The conclusion is drawn that the combination blade and converging type gives the more even flow. The flow across the width of a machine or model is however to such a large extent a function of the distribution system and flow pattern and resistances in the box that the conclusions drawn from the results should be accepted with reserve until further evidence is available.

In the figures indicating the tissues headbox designs of C. A. Lee can be seen both a specialized tissue slice (Figure 24) and a specialized form of the blade type slice comprising a sort of combination of the adjustment of the blade with the flow conditions of a short projection slice (Figure 23). The special tissue slice consists of a solid bar with no adjusting spindles. The stock is not discharged through the slice or to the wire as on a normal book or news machine, and over a considerable portion of the slice area flow is backward.

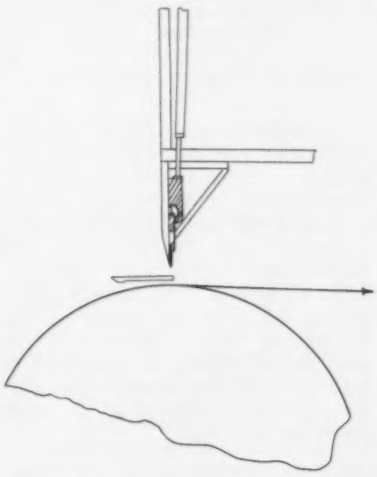


Figure 39: Blade type slice as used on conventional rectangular air loaded headboxes.

There are various practical points with regard to top lip construction that are common to all the designers. Firstly, the adjusting screws should be properly spaced—too great a spacing renders control difficult, too close a spacing may make the lip insufficiently flexible. Generally, a distance of 4½ inches to five inches is the best. There should always be a special provision made to ensure that the edges are adjustable—if the end screws are too far from the edges, then the edges of the lip will not lift with the end screws and all sorts of running difficulties will result with the edge of the sheet.

The actual blade of the lip must be thick enough to avoid warping while at the same time maintaining flexibility. For a 240-inch machine, for example, a thickness of ¼ inch is the optimum. To prevent fibers gathering on the thickness of the lip as the jet leaves the slice, the lip should be bevelled at this point.

In the cases of the projection slices where the flexible section is fastened to a non-flexible part, there must be no step which would pick up fibers and air. The usual method is to join the two by special screws, the heads of which are then snapped off and the whole ground and polished. These screws must be put in staggered rows; if they are in only one row, then the flexible section will rock on the non-flexible

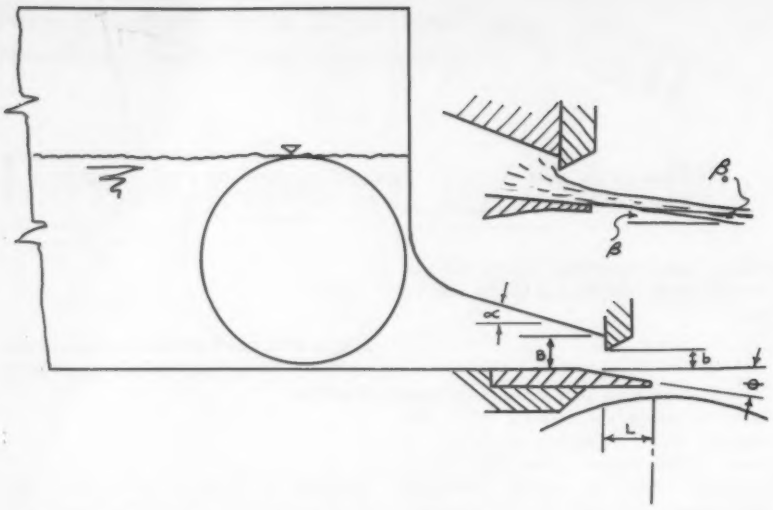


Figure 40A: Type of slice on which variation of jet angle with bottom lip projection and slice opening was measured.

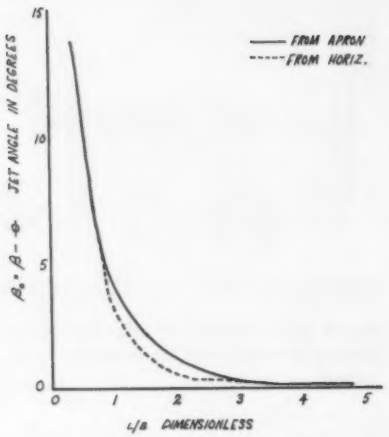


Figure 40B: Dimensionless plot summarizes measurements made on Figure 40A.

one where it is butted in. If this happens, then a discontinuity in the form of a step is formed.

Common to all the projection type slices also is the fact that the lugs on the lip upper surface to which the adjusting screws are attached must be fitted in such a way that the twisting movement of the screw does not affect the lip. They should thus be secured in the direction of flow and not across it and the method of fastening must be adequate.

For all designs to prevent fluttering of the bottom lip this must be as sturdy and solid in construction as is allowed by the space available. The necessarily thin projecting section should be supported by a thick section at the earliest opportunity.

With a projection slice any discontinuity in the upper surface of the box prior to the actual slice opening (including undersurface of the top lip against which the stock flows) will give a discontinuity in the slice jet that in even moderately severe cases will persist right down to suction boxes. Frequently the efforts of the machine-tender to "adjust out" these permanent irregularities in the jet will cause a poor basis weight distribution over quite a distance either side of the original defects. Furthermore even microscopic nicks in the top lip at the actual slice opening can have an amazingly severe result and will show as a light area at the flat boxes. For successful operation of projection slices the area immediately upstream of the opening must be kept clean and damage free. In addition to the discontinuation in the jet already mentioned, failure to take the proper precautions may result in slimy lumps and air bubbles.

Nelson in (18) has presented the first published work on the hydrodynamics of the slice itself. Figure 40A shows the type of slice on which the measurements were made and Figure 40B a dimensionless plot summarizing the measurements. It is pointed out that three more or less distinct regions of control sensitivity exist, low when the ratio

$$\frac{\text{projection of bottom lip}}{\text{slice opening}} = \frac{L}{b}$$

is greater than 2, high when $\frac{L}{b}$ is less than 0.7 and moderate between these two regions. This data permits a calculation of the point of impingement of the jet with respect to breast roll and forming board.

Mardon and Truman (41) and Mardon and Culver (42) have presented analyses showing the effect of jet angle on the magnification of velocity defects present in the slice jet. A reading of these papers with that of Nelson enables the present state of knowledge of the slice jet to be grasped.

Perforated Rolls

Perforated rolls were not dealt with except by implication in (2). It was stated there that they should have a solidity ratio of one for efficient operation, but no elaboration of this statement is given. The conclusions in the second part of that review suggested an investigation of the exact effect of perforated rolls on the downstream flow.

In part III of reference (2), it is pointed out that the roll should be as near the bottom and, where applicable, the top or front wall of the box as possible to prevent a disproportionate amount of the flow by-passing the roll. It is there stated that the roll should be placed 20 hole diameters from the slice for a speed of 1200 f.p.m., and the formula for calculating the roll position is given as:

$$L = \frac{Vb}{12.5}$$

where L—distance from slice opening to roll (meters)
V—velocity of fluid from slice, meters/minute
b—width of land between holes in meters

For a 1 inch hole with ¼ inch average land width, this would give for a jet speed of 30 f.p.s.: i.e. a wire speed of 1800 f.p.m. or 545 meters/minute

$$\frac{545 \times 0.006}{12.5} = 0.26 \text{ meters i.e. } 26$$

centimeters or about 10 inches.

It is known from experience that this is an insufficient distance due

to the fact that it is the influence of velocity through the holes and not through the slice that is important. An alternative formula suggested by Mardon (55) is:

$$d = \frac{k_1 V^{4/3} \pi^{1/2}}{b^{1/3}} \quad \text{where}$$

k_1—constant depending on the roll and may be taken as about 26 for a 50% 52% of open roll

V—speed through holes in roll f.p.s.

π—hole diameter (ins.)

d—distance to place roll from slice (ins.)

b—diameter of perforated roll (ins.)

For 1200 f.p.m. and a 10 inch diameter roll with 1 inch holes, the formula will give:

$$\frac{26 \times 1.85 \times 1}{2 \times 15} = 22 \text{ inches}$$

and for a 16 inch diameter roll with 1 inch holes at 1.9 f.p.s. through the holes (about 1600 f.p.m. machine speed), the formula would give 25 inches as the minimum distance from the slice to the roll. For a 13 inch roll with ⅝ inch holes and a velocity of 2 f.p.s. the distance would be 25 inches or approximately 40 diameters.

In reference (5) Van der Meer quotes the same formula as mentioned previously and gives a minimum distance of 6½ inches as corresponding to the machine speed of 520 f.p.m. or 1.2 f.p.s. through a roll of eight inch diameter. Mardon's formula would give a distance of 14½ as being the minimum for that speed and hole diameter of ⅞ inch. It appears that this second formula gives rather too large distances at low flow rates and Van der Meer's too small at high flow rates.

The deficiencies in formation caused by a perforated roll too near the slice has been called (41) the wake effect. This reference presents photographs characterizing such wake effects but refrains from giving any design data. The high speed film quoted at the end of the paper also delineates and characterizes the wake effect showing conditions with it present removed.

Reference (25) also discusses the effect of the hole size and while discussing perforated plates the statement is made that one inch diameter holes are the maximum that can be recommended if a condition of fine grain turbulence is to be obtained. No actual data is given of the size of the holes in the perforated rolls other than to say that they "are much smaller than have been used heretofore."

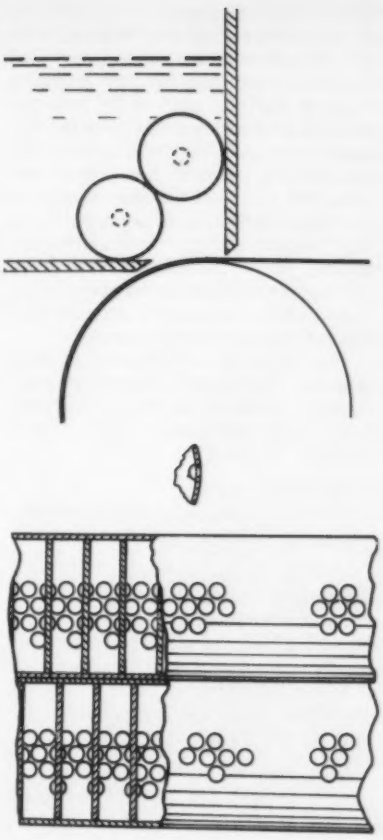


Figure 41: Mounting of rectifier plates inside perforated roll.

It is also stated (1) to (4) that if the perforations are omitted at the last one inch of the roll at either end, this will speed up the flow at the edges due to an outward current to the walls. This is a dangerous piece of design advice and is one point where the earlier review by Mardon and Van der Meer (1, 2) is in error; though this result can be achieved, it is extremely difficult to ensure success and the method is best avoided. The standard practice today is to carry the holes right to the edge and to make up for the slow flow at the edges by bleeding off from the sides of the box about 4-6 inches prior to the slice opening. The amount of bleed is adjustable to enable the compensation to be made and the slice opening retained parallel.

Mardon and Van der Meer suggested the use of a half-round or similar strip on the floor of the box to ensure that the flow passes through the roll. Though no publications on this exist, this design is known to have been used with success.

Up to this point, roll design has been discussed as a problem in fluid mechanics. There are, however, several additional considerations that have been taken into account in designing actual rolls.

There is a definite relationship between roll diameter and machine width for rolls of 50 per cent of open area due to the deflection or sag of the rolls. These are briefly set out in the table below:

Machine Width inches	Roll Diameter Min.
Up to 140 inches	8 inches
Up to 180 "	10 "
180—200 "	12 "
200—240 "	14 "
240—290 "	16 "

Generally, the thicker the wall of the roll, the greater is the effect are usually constructed with a wall thickness of ⅛ inches, for larger sizes, the thickness is usually 3/16 inches with some rolls of a ¼ inch thick shell being built today for some of the larger diameters. The edges of the holes must be rounded so that there is no danger of fibers sticking and the roll must be polished smooth so that it can be easily cleaned by hosing.

In addition to the above, it is common practice to fit the rolls with internal flow rectifying plates as shown in Figure 41, taken from reference (43). These plates are so located as to either cross a hole at the diameter or to pass behind a land. An earlier reference to this type of construction is (44). Generally, the plates are inset from the shell of the roll by ⅛ inch to ¼ inch and are fastened only at several points on the circumference rather than all the way round, as shown in the figure.

Owens (45) suggests following Wenzl and Mason's patents for the construction of a series of rotating disks without a perforated shell surrounding them. The former of these constitutes the first known reference in the literature to rotating flow eveners.

The other principal difficulty in distribution roll construction is that of the bearings. There are two main methods of construction in

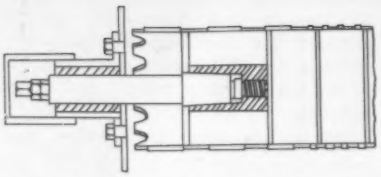


Figure 42: Rectifier roll bearing assembly shaft projecting into the flow.

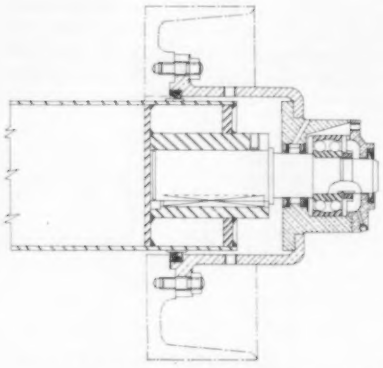


Figure 43: Rectifier roll bearing assembly all bearings outside the flow.

use. Figure 42 taken from Hornbostel (46) shows the design when the bearing projects into the flow. Generally, this is not favored since it is liable to cause a severe flow disturbance and designs such as Figure 43, where the roll is extended into the headbox wall are preferred. This, however, has the disadvantage of requiring a large diameter seal at the headbox wall.

Van der Meer points out in his paper that the direction of rotation of perforated rolls is not important (because the turning is only for self cleaning purposes) and gives a surface speed of half a foot per second as adequate. In spite of this, it is remarkable how many perforated rolls have been built with the unnecessary expense of variable speed and reversible motors. Changing the speed of rotation of the roll can have an effect in minimizing flocculation caused by the holes in the perforated roll being too small for the fiber used with regard to flow speed through the holes. When the holes are too small or the flow is stagnant at the upper of two slice rolls, relatively high speeds are needed. The unimportance of the direction and within reason the speed of rotation is also confirmed by the experimental work of H. W. Bennett (47). Bennett's paper is the only one so far published that is specifically directed to the subject of perforated rolls. He describes work done in a wind tunnel using air as the working fluid on various perforated roll and plate designs. He demonstrated the importance of the solidity of the roll which should be, he states, about 45 per cent for the maximum velocity corrective effect and about 50 per cent for the turbulence inducing effect. At higher solidities, he confirmed that an unpredictable flow profile unrelated to the upstream profile could result.

The intensity of turbulence was related to the grid characteristic. Judging from his work and comparing it with practice, a downstream intensity of 0.03 for

$$\frac{\text{fluctuating velocity}}{\text{mean velocity}}$$

is about the desirable figure.

Bennett found that the scale of the turbulence of "eddy size" was dependent on the detail of the grid design, its solidity and the diameter of the solid parts of the roll. From the data that he presented, the scale should be about 1.4 for

$$\frac{\text{eddy size}}{\text{solid thickness}}$$

for a well designed roll.

Bennett's conclusion summarizes the position with regard to these rolls when he said: "It appears that the function of a particular roll should be considered in the design of the roll. Through control of roll solidity and individual element size, control of velocity evening action, and turbulence characteristics downstream of the roll is afforded. Rolls to promote a uniform velocity profile should have solidities approaching 45 per cent while a roll to promote small scale turbulence patterns should have a large grid pattern and those to promote smaller scale turbulence a smaller grid pattern as well as lower solidity."

Bennett also studied rolls made from circular plates with rolls

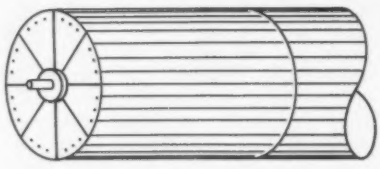


Figure 44: Stave roll of frozen flow box.

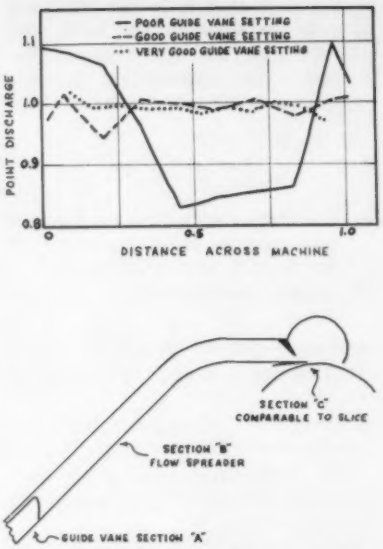


Figure 45 (Above): Distribution obtained at slice with Lee type distribution system. (Below) Points of measurement and type of box on which they were made.

around the circumference—the so called stave rolls. Figure 44 shows one such, a design taken from reference (48) a patent by R. D. Duncan. These rolls were said to have the advantage over the normal perforated roll in that they had a deflocculating action without creating turbulent waves. Bennett's work does not support this idea and though these rolls were used in the original frozen flow boxes, it is understood that the more recent designs of this box have incorporated perforated rolls of normal design.

Reitzel tried stave rolls in the flow nozzle he describes in (8). These rolls were later replaced by normal rolls probably because the open area was too small due to the large diameter of staves used.

Measuring Headbox Conditions

Little is available in the literature on methods of measurement except in the publications of Mardon, Nelson and Muller-Rid. Van der Meer (5) discussed certain types of manifolds and gave flow distribution diagrams that are apparently taken in the slice but does not discuss his method of measurement. He is, however, known to be the inventor of the system of measurement wherein tubes are inserted into the slice and can be adjusted by means of a specially designed carriage. The initial apparatus of Gavelin and Mardon (49) was based

on Van der Meer's equipment and to him must go much of the credit for starting off the other investigators (50).

In addition to the pitot tubes in the slice which give the pressure distribution across the machine and tell something of the condition of the jet, a volumetric survey can be made by catching and measuring all the water from a small section of the slice. This is the method which has been used by other investigators, and was used in (18) to produce the results shown as Figure 45 in this review.

The method of measuring inside the flow box by means of an adjustable Pitot tube has been described in reference (13) and (49) and the use of the electric flow meter was discussed in (13), where examples of the use of this equipment and the flow maps that result may be found.

In the measurements made for (18) a flow meter was used, it being suspended from a beam and driven across the box.

It seems pertinent at this point to present a table from (17) showing the level of pressure variations in the slice jet as related to machine performance and as obtained by Pitot tube measurement.

Investigation by model studies is briefly discussed in reference (51) and the first publication relating to the use of the technique of electrical analogy in the investigation of paper machine headbox problems is given.

Conditions on the Wire

The methods discussed above are those for investigation inside the headbox and in the slice. In addition to these three methods exist, for investigation of conditions on the wire and thus by induction, the conditions inside the box may be surmised.

The most common method for investigating conditions on the wire is the use of the Beta ray gauge on the dry paper. This method is now widely applied and has recently been refined by the introduction of analysis by means of the analogue computer. As far as the authors are aware, the credit for developing this technique initially belongs to Gunnar Gavelin, though there is now a very considerable literature in this field.

The second of the methods is the introduction of dyed fibers into the box, or a stream of dye. The spread of the dye is then examined in the dry paper and is related to the position of the original injection. A development of this method (52) uses radioactive fibers instead of dye and subsequently measures the distribution of radioactivity in the finished paper. This has the advantage of avoiding laborious work of identifying and counting dyed fibers which is necessary if the dyed fiber technique is used.

The third method that has been used is that of high speed photography. The use of high speed stills has been practiced from about 1950 though there are no references in the literature at this early date. As far as can be traced, the technique was developed independently by several workers, but among the first appears to have been B. H. Browning working under Nissan (53). The use of stills has some fairly definite limitations and a number of workers in the field have followed (54) in the use of high speed cinematography in the investigation of flow phenomena on the wire. The latest example published of this technique is (41).

Conclusions

The increase in the knowledge of the design and operation of paper machine headboxes may be stated as following the substitu-

TABLE I—(From Ref. 17)

COMPARISON OF MAXIMUM SLICE JET PRESSURE VARIATIONS ON CROSS MACHINE HEADBOX TRAVERSE FOR DIFFERENT HEADBOX DESIGNS

Headbox Type	Total Variation in WG. Measured by Pitot Tubes at Slice	Remarks	Machine Capability (Newsprint)
1) Open Headbox for Medium Speeds (Fig. 8 of Ref. 13)	0.65		(1) at 1400 f.p.m.
2) Old Type Open Headboxes for Various Speeds (Figs. 4a, 4b of Ref. 13)	0.55	Irregular flow between screens	(1) (2) at 1500 f.p.m.
3) As above (Figure 4c of Ref. 13)	0.25	Flow changed by alteration to baffle	(2) at 1700 f.p.m.
4) Open Box Medium Speeds (Fig. 16 of Ref. 12)	1.15	Slice poorly set due to bad press section and bad dryer ventilation.	(3) at 1450 f.p.m.
	0.65	Slice readjusted	(1) at 1450 f.p.m.
5) Open Box Design as 4. But Manifold Type Inlet To Box	1.1	With Deculator system	(1) at 1550 f.p.m.
6) Pump Box	0.12	154" width	(1) at 1250 f.p.m.
7) Pump Box	2.5	234" width Over flow valve closed	(3) at 1700 f.p.m.
	1.8	Over flow valve full open	
	1.25	Over flow valve normal	(3) at 1700 f.p.m. but more even sheet
	0.67	Over flow valve normal, slice reset	(2) at 1700 f.p.m.
	0.2	New distributor roll with overflow valve normal	(1) at 1900 f.p.m. and open couch draw
8) Conventional Air Loaded Rectangular Box	0.55		(1) at 1900 f.p.m. and with open couch draw

(1) Very efficient operation
(2) Normally efficient operation
(3) Below normal efficiency (85%-88%)
(4) Sub efficient operation below 85%

tion of measurement for discussion on both the equipment in the field and on properly constructed models. The techniques briefly described above have been the means of a remarkable advance in the last ten years, but they must not be thought of as final. New methods of measurement are continually being devised and it is to be hoped that they will be published. Even by application of the already existing methods, however, to design existing and operating, the present body of knowledge can be enlarged to a great extent.

ACKNOWLEDGEMENTS

The editors are very grateful to two of the leaders in this field, C. A. Lee and J. Mardon, for their assistance by reviewing this extensive article and providing helpful comments while it was in rough manuscript form.

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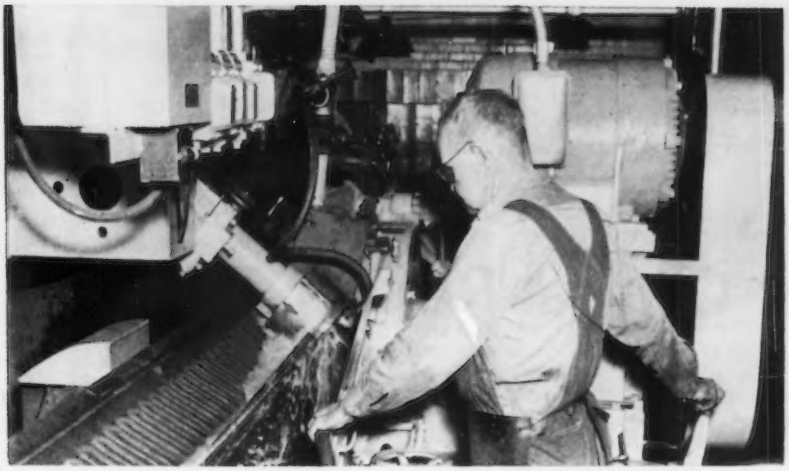


Back grinder attachment for standard knife grinder makes it possible to grind both sides of a chipper knife at the same time.

How UB-C Grinds Chipper Knives More Efficiently and Economically

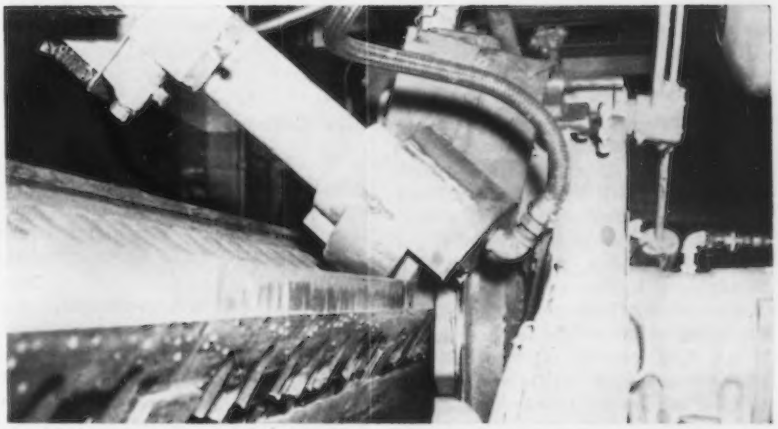
A unique innovation in sharpening chipper knives is resulting in substantially lower costs and increased life of the knives at the world's largest kraft paper plant. Union Bag-Camp Paper Corp.'s mammoth mill at Savannah, Ga., which just recently set an all-time daily production record of 2737 tons of paper and board, has come up with a new method of knife grinding that it feels is used nowhere else in the industry.

Heart of the System

Basically, the heart of the new system is in grinding both sides of the knife edge at the same time, using one stone on one side and a second stone on the back side. Union Bag-Camp sharpens its chipper knives with a standard Bridgeport grinder with a 190-inch magnetic chuck. It handles five knives at a time.

Over the years, as production increased at the mill and the demand for chips grew, various ways of increasing production on the grinder were considered. One of these was the idea of setting up two stones to grind both bevels on the knives at the same time.

Wood department officials at the plant took their problems to chipper knife manufacturers and grinding wheel companies, but always received the same answer: no one was doing it that they knew of, and it was doubtful it could be done at all. Nonetheless, plant officials decided to see if it could be made to work.



Closeup view of the grinding stone. The attachment, designed by UB-C engineers, permits more accurate grinding and increases life of chipper knives.

Designed by UB-C Engineers

Company engineers designed an attachment for the Bridgeport (they called it a "back grinder") that ground the $\frac{3}{8}$-inch bevel on one side of the blade in the same action that the regular stone was grinding the $1\frac{3}{8}$-inch bevel on the other. This eliminated the second grinding, also saved the considerable time previously spent in turning and positioning the five knives for the second sharpening. Grinding wheel segments of 80 grit are used.

The arrangement has worked out quite satisfactorily, and Union Bag-Camp wood officials say that, in addition to the time saving, it increases the life of their knives by about 10 per cent and permits more accurate grinding.

Union Bag-Camp's knife grinding department is responsible for the knives of four chippers that currently chew up close to 3,800 cords of wood every day. This is enough work to keep the grinder running 80 hours a week, averaging 20 sets of 10 knives each a day. It does it more efficiently and economically because of its new back grinder attachment.

MAINTENANCE SERIES
NUMBER 23

Keeping Your Conical Refiner To Ripe Old Age With Less Time Out

This discussion, limited mainly to Morden's machines, separates maintenance of conical refiners into five categories: Drive mechanism, rotating elements, packing gland area, fillings, adjusting mechanisms.

Paul B. Stretch,
Manager,
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If we raised beef instead of manufacturing paper mill equipment, this article would probably be entitled, "The Care and Feeding of Young Beef Stock." Fortunately for everybody concerned, and especially for the beef industry, we are not going to advise as to the care of young beef stock—mainly because we don't know anything about it. We do know something about conical refiners and feel that we are in a very good position to offer advice on the care and maintenance of our own Morden "Stock-Makers" and "Stuff-Makers."

Since 1931 Morden Machines Co. has manufactured 1100 machines—almost 600 here in the United States and over 500 through our licensed manufacturers in England, Canada and France. There are 125 mills in the United States and 165 mills in 25 other countries that have Mordens operating today, and our machines of earliest manufacture are still in service. This is the background on which our authority is based.

Proper maintenance and operation are so closely related that it is sometimes hard to talk about one without the other. Suffice it to say that poor operation can certainly increase maintenance and, by the same token, poor maintenance can certainly reduce the operating efficiency.

Five Categories

Maintenance can be broken down into five basic categories: (1) driving mechanism; (2) rotating elements; (3) packing gland area; (4) fillings, and (5) adjusting mechanism.

1. The driving mechanism includes the electric motor and coupling which should at all times be kept in perfect alignment. A coupling that is out of line can easily transmit shocks to either the refiner bearings or the motor bearings, and could, in fact, affect the whole operation of the machine through excessive vibration. Proper lubrication of both motor and coupling is, of course, necessary and should be checked on a routine basis.

2. The rotating elements consist of the rotor shaft and bearings, the protective seal rings and flingers and the rotor itself. Bearings are one of the most important parts of any piece of rotating equipment and should receive the lion's share of attention. Unfortunately, there are times when this is not the case. But, with reasonable care, bearing life can easily be maintained and even extended.

Proper lubrication is probably the one most important aspect and means a lot of different things—not only the correct type of lubricant for a given job, but the correct amount as well. Probably more bearings are ruined through over-lubrication than by under-lubrication. Proper lubrication would also mean that the lubricating system would be kept free of all contamination. Flingers and seal rings are provided for this protection, and every effort should be made to keep them free of any accumulation of dirt or pulp that might build up around this area.

Moisture can be just as detrimental as foreign solids in a lubricating system and sometimes much harder to detect. In spite of all the efforts of lubricant manufacturers in adding rust and oxidation inhibitors to help protect the bearing surfaces, moisture in the system can only shorten the bearing life. This can be especially true if the moisture contains traces of acids.

Frequent inspection is the answer and, if necessary, draining, flushing and refilling to the correct level. How does moisture get into the system? In various ways. Poor housekeeping in storing new lubricants is one way, condensation within the system is another, and poor maintenance of the packing gland area is another. Which is the worst offender? It is hard to say.

Poor storage facilities can cause trouble by contamination and are probably the most easily corrected. Condensate is not only difficult to correct, but difficult to detect. Care in cleanup and especially hosing down should be practiced. Promiscuous use of the hose not only creates a temperature change but also presents the possibility of water entering the system through breathers or seals. Severely leaking packing can be a major contributor not only to the moisture factor but also to contamination by chemicals and/or pulp fibers. As said before, seals and flingers are there to prevent just such occurrences. However, there are times when the best seals in the world cannot cope with packing gland leakage up to, and sometimes over, rates of one gallon per minute. This type of condition should be corrected just as soon as possible.

In general, most bearings will perform to utmost satisfaction if given half a chance.

The earlier model "Stock-Makers" used grease lubrication, and the later models a static oil system incorporating a large oil reservoir. Newer models can use either grease or oil. The oil system is a closed circulating type. Quality materials, proper lubricants and good housekeeping are the watchwords for long, satisfactory bearing life.

Packing Glands

3. The packing gland area is another really important maintenance spot. In the Morden, only one packing gland is required, and there is no longitudinal adjustment of the shaft under the packing. In most cases the packing sleeve is a bronze alloy chosen for its denseness of structure, resistance to corrosion, ability to withstand friction without tearing the packing and electrolytic qualities. The packing itself is top quality material and provisions are made for a lantern ring water connection. The success of operation when using the lantern ring is, of course, based on the premise that the lantern ring supply is clean, fresh water at a pressure of 50 p.s.i.g. greater than the "Stock-Maker" inlet pressure. We recommend the use of lantern ring water wherever conditions of operation allow and suggest that the packing gland be tightened only enough to allow a slight dribble of water to show.

Proper maintenance and operation are very closely related. Poor operation can certainly increase maintenance. By the same token, poor maintenance can reduce operating efficiency.

At the time of repacking, inspection of the lantern ring water supply and the ports in the ring itself should be checked for any plugged condition, and repairs made as required. Also, the condition of the packing sleeve surface should be inspected. If found to be worn, it should be replaced with a new sleeve. Early and existing model "Stock-Makers" have had the packing sleeve installed on the hub of the rotor. Newer models have the sleeve on the shaft itself. This has reduced the diameter and consequently the peripheral speed, providing even better sleeve and packing life.

As to using other materials in packing sleeves rather than bronze, we comment as follows:

Extensive research, which included over a year of testing materials, proved that the bronze used in packing sleeves is the best material for most conditions. It is true that other materials, such as certain types of stainless steel and so-called precious metals, are better suited for certain extreme conditions of operation. Some of these have a terrific price tag attached and their use doesn't warrant the expenditure. This is also true of some packings as well.

4. The fillings, consisting of a rotor and a shell, are the working elements. The rotor, as its name implies, is the conical rotating member and the shell is the stationary member. By stationary, we mean it doesn't revolve. It does move in a longitudinal direction to the rotor axis, and bar-to-bar adjustment is made in this manner. The "Stuff-Maker" for jordaning is adjusted in the same manner, thus eliminating all the problems inherent with the conventional jordan that moves the rotor longitudinally for bar-to-bar adjustment. Our motors and shells are integral castings and, until the advent of our new models, have been one-piece construction. Two-piece construction—i.e., a rotor hub and shell body, both with replaceable liners—are also integral castings and have the added advantage of considerable savings in cost when replacements are required. Proper operation of the rotor depends a lot on its ability to run true. If, when fillings are changed, the rotor is not seated correctly on the shaft, it may result in excessive vibration and poor bar-to-bar contact with the shell. This will reflect back into the bearings and can develop bearing trouble. Also, the improper bar-to-bar relationship results in excessive filling wear and loss of efficiency. The latter is probably the most important factor.

Clean Seats Vital

Whether the rotor construction is one- or two-piece, the most common cause of this condition when changing fillings is dirt. The fits and seats between the rotor and rotor shaft or liner and rotor must be perfectly clean. There is no reason to smear grease or white lead all over these areas; in fact, it is detrimental. In the first place, dirt can stick to these materials a lot easier than to a clean surface. In the second place, the chance of a rotor loosening up is always there because the grease or white lead will oxidize, deteriorate and allow a space to develop, thus loosening the fit. All that is necessary is thorough cleaning of all metal surfaces and final wiping with a lightly oiled cloth. Also, be sure that all keys and keyways are in good condition and that no possibility of hang-up can occur.

All the fits are accurately machined and the rotors, rotor hubs and liners are dynamically balanced so, with proper installation, the rotation will be concentric and true without any sign of vibration. A trial check with the motor running and before the inlet section is bolted back into place is in order after a rotor change. If the rotor or rotor hub is properly seated on the shaft or, in the case of two-piece fillings, the rotor liner to the hub, then the runout at the small end of the rotor should not exceed

Using the correct kind, as well as the correct amount of lubricant on bearings is most important. Probably more bearings are ruined through over-lubrication than by under-lubrication.

Improper seating of a filling on the shaft may cause excessive vibration and poor bar-to-bar contact with the shell. Excessive filling wear and loss of efficiency will follow.

a few thousandths, depending on the condition of the "Stock-Maker" bearings. The shell or adjustable member of the fillings is also integrally cast and, like the rotor, has been of one-piece construction up to the advent of new models when the two-piece construction was started. When changing the one-piece shell it is necessary to remove the nuts, washers and slippers from the adjusting rods. The two-piece shell construction requires only the removal of the bolts holding the liner in place. This has simplified the filling change considerably, with less chance of misalignment. In either case, all mating surfaces should be cleaned before reassembling so that proper line-up between rotor and shell can be maintained.

The woods in between the shell bars are put there to prevent excess stock from channeling through the cell spaces. Removal of these woods before the designated time may allow excess stock to channel through without uniform treatment. Failure to chip or remove the woods at the proper time causes the bars to become flush with the woods, decreases treatment and the load cannot be held. Obviously, the instructions for proper chipping and/or removal should be followed to obtain the best results.

Adjusting Mechanism

5. The adjusting mechanism (as the name indicates) provides the longitudinal movement to the shell so that correct bar-to-bar clearance can be maintained for the proper treatment. The high gear ratio with its simple and rugged construction makes this virtually foolproof. Occasional lubrication is all that is required, as long as the relationship between the adjusting rods is not disturbed. If for some reason this mechanism has to be dissembled, then it is very important to reassemble so that the adjusting rods are in proper phase with each other. To accomplish this can be a long and complicated process, depending on the model and the degree of misalignment. Basically, the adjusting rods should be extended an equal amount, ±.006, which is within the limits of the worm gear tooth relationship. This is when measured from the flange face of the inlet section back to the shoulder on the adjusting rod. It is quite apparent that, if these adjusting rods are not assembled within these limits, the shell is not going to mate properly to the rotor and will bind all the moving parts, making the handwheel difficult to turn. The instruction manual provides all the necessary information and should be checked for each specific model condition.

If a "Set-Maker" remote control device is used, occasionally lubrication or adjustment is all that is required.

Maintenance problems vary from mill to mill, so there is no set rule that fits all conditions. However, our instruction manuals cover all phases of maintenance and careful observance will pay dividends in less downtime and less replacement parts. This spells money in any mill.

An Error of Omission . . .

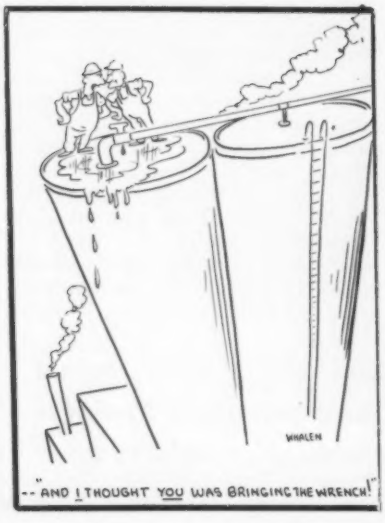
An article titled "Some Definite Improvements in A Mill's Finishing Operations," published in our July 25 issue, left the impression that work with a vacuum carton sealer met with failure. Actually a portion of this article which gave quite a different impression was omitted. The text concerning the sealer should have read as follows:

The second item under packaging is the vacuum carton sealer developed by Southworth Machine Co. for telescope cartons. We have had a certain amount of experience with pressure seal packages. Our efforts met with failure because the carton package was difficult to open. In this first attempt to seal the top of the telescope carton to the body, latex adhesive was used.

The new Southworth machine seals cartons automatically except for the adhesive application. The principle of operation is to apply a vacuum to a rubber blanket draped over the carton to be sealed. The machine conveys the carton under the blanket, moves the blanket into sealing position, applies the vacuum, and conveys the carton out of the sealing area. The sealing action is quick and positive; the machine unit itself practically foolproof.

Latex adhesive could, of course, be used with this unit. However, the latest development is to use high sheer-low tensile adhesive ("Temp Seal") for the binding material. This adhesive produces a rugged carton which will withstand handling and transit stress due to the adhesive's high sheer strength, and yet the low tensile feature of the adhesive permits easy opening of the carton. This latter feature is the key to success in our operations. Field trials plus the experience of several other mills now using the Southworth sealer indicate that this method of packaging paper will soon gain the general approval of the industry. Advantages are these:

1. A more rigid, stronger telescope carton.
2. A reduction in material costs gained by substituting adhesive for kraft and filament tapes.
3. Vacuum sealing compacts the paper thus acting as a deterent to paper slippage within the carton.
4. With care in opening, the carton is left intact and may be reused by the printer.



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1. Parallel feed
2. Floating rotor shaft assembly
3. Twin refining surfaces
4. Compact, accessible automatic controls
5. Hydraulically controlled refining head
6. Easy access and minimum maintenance
7. Wide choice of plate designs
8. Choice of 26", 34" or 42"-size with motors up to 1250 horsepower
9. Rugged, dependable construction
SPROUT-WALDRON

SPROUT-WALDRON PRESSURIZED REFINER

twice the normal capacity in a single unit

Those in the know were quick to choose THE NEW PRESSURIZED "SPROUTS"

Here is a different type stock preparation refiner designed for superior quality control, low operating costs and minimum maintenance. The parallel feed arrangement serves twin refining surfaces, giving twice the capacity of single disc units. Key to refining accuracy and dependability is the floating rotor shaft disc assembly which rotates between the fixed and hydraulically controlled movable heads. The flow of pulp is equally distributed between both sets of plates, assuring uniform refining and even plate wear. If you are looking for mechanical simplicity, high production and uniform quality, plus low operating and maintenance costs - - get the facts on the Sprout-Waldron 26", 34" and 42" pressurized refiners. Bulletins available on request.

* Container Corporation of America
Consolidated Water Power & Paper Co.
Oji Paper Company, Ltd.
Kimberly-Clark Corporation
Tammerfors Linne-Och Jern-Manufaktur, A.-B.
Manchester Paper Board Co., div of Federal Paper Board Co.

* ***over 13,000 connected horsepower***

SPROUT, WALDRON & CO., INC.

MUNCY, PENNSYLVANIA, U.S.A.

E/209

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helps you gain the full benefit of color

You may be searching for distinctive new shades to stimulate sales; perhaps you are seeking new methods of cutting color production costs, or possibly you're developing materials that require coloring agents with unusual properties....

Your GDC technical service representative has complete knowledge and experience of all paper-color processes. He is always available and ready to help you with color matching, formulation, testing or any other color problems you might encounter.

Whatever your plans, why not get in touch with him and see how our custom color service will benefit you? It's yours for the asking.

Have you seen a copy of our booklet "Dyestuffs for Beater Coloring" (GDC-329A)? It contains comprehensive information on our line of colors complete with application data and fastness properties. Write for your free copy today.

gdc gaf

paper

gdc dyes for paper—a complete color spectrum and whiter "whites"

	APPLICATION			CLASS			
	Beater	Calender	Coating	Basic	Acid	Direct	Pigment
YELLOW							
Auramine	•	•		•			
Brilliant Pure Yellow	•				•		
Chinoline Yellow	•	•	•		•		
Chrome Yellow	•		•				•
Chrysophenine	•					•	
Direct Yellows	•		•			•	
Fast Light Yellow		•	•		•		
Fastusol® Yellows	•		•			•	
Hansa® Yellow	•		•				•
Metanil Yellow	•	•			•		
Oxide Yellow	•		•				•
Paper Yellow	•					•	
Permagen® Yellow	•		•				•
Stilbene Yellows	•					•	
Tartrazine		•			•		
ORANGE							
Acid Orange	•	•	•		•		
Benzo Fast Oranges	•		•			•	
Chrysoidines	•			•			
Direct Fast Oranges	•		•			•	
Fast Light Orange		•			•		
Fastusol Oranges	•		•			•	
Orange	•	•	•		•		
Permanent Orange	•		•				•
Paper Orange	•					•	
BROWN							
Benzo Brown	•					•	
Bismarck Browns	•		•			•	
Fastusol Browns	•		•			•	
RED							
Benzo Bordeaux	•					•	
Benzo Fast Scarlets	•		•			•	
Benzo Rhoduline® Red	•		•			•	
Brilliant Croceine	•	•	•		•		
Direct Pink	•					•	
Direct Reds	•					•	
Fast Red	•				•		
Fastusol Pink	•		•			•	
Fastusol Reds	•		•			•	
Fastusol Scarlet	•		•			•	
Magenta	•	•	•	•			
Oxide Red	•		•				•
Paper Red	•				•		
Paper Scarlets	•					•	
Permagen Red	•		•				•
Permanent Carmine	•		•				•
Rhodamines	•	•	•	•			
Safranine	•	•	•	•			
Solar® Pink	•		•				•
Solcarbo® Pink	•		•			•	

	APPLICATION			CLASS			
	Beater	Calender	Coating	Basic	Acid	Direct	Pigment
VIOLET							
Brilliant Benzo Violet	•					•	
Crystal Violet	•	•		•			
Ethyl Violet	•	•		•			
Fastusol Violets	•					•	
Formyl Violet	•	•			•		
Methyl Violet	•	•		•			
Solar Coating Violet			•				•
Solar Violet	•		•				•
BLUE							
Benzo Azurine	•		•			•	
Benzo Blues	•		•			•	
Benzo Sky Blue	•		•			•	
Brilliant Benzo Blue	•		•			•	
Brilliant Wool Blue		•			•		
Fast Bond® Blues	•				•		
Fastusol Blue	•		•			•	
Fastusol Turquoise Blue	•		•			•	
Heliogen® Blues	•		•				•
Methylene Blue	•	•	•	•			
Neptune® Blues		•	•		•		
Paper Pure Blue	•	•	•	•			
Rhoduline Blues	•	•		•			
Solar Blues	•		•				•
Solar Coating Blue			•				•
Solcarbo Blues	•		•			•	
Soluble Blues	•				•		•
Victoria Blue	•	•	•	•			
Victoria Pure Blue	•	•	•	•			
GREEN							
Benzo Greens	•					•	
Brilliant Green	•	•	•	•			
Fast Bond Green	•				•		
Fastusol Greens	•					•	
Guinea Green	•	•	•		•		
Heliogen Greens	•		•				•
Heliogen Viridines	•		•				•
Naphthol Green		•	•		•		
Neptune Green	•	•	•		•		
Pigment Green	•		•				•
Solar Green	•		•				•
Victoria Green	•	•	•	•			
BLACK							
Acid Black		•			•		
Basic Black	•	•		•			
Diamine Black	•		•			•	
Diazo Black	•		•			•	
Direct Deep Black	•		•			•	
Fastusol Greys	•		•			•	
Naphthylamine Black	•	•	•		•		
Nigrosines	•		•			•	
Permanent Black	•		•				

Partial list of colors and types available from GDC

GDC, as a major supplier of dyes for the paper industry, offers the newest colors available in the widest variety of forms. In this manner we are able to satisfy all individual requirements. Write direct for complete information and samples or call the GDC service representative nearest you.

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A SALES DIVISION OF

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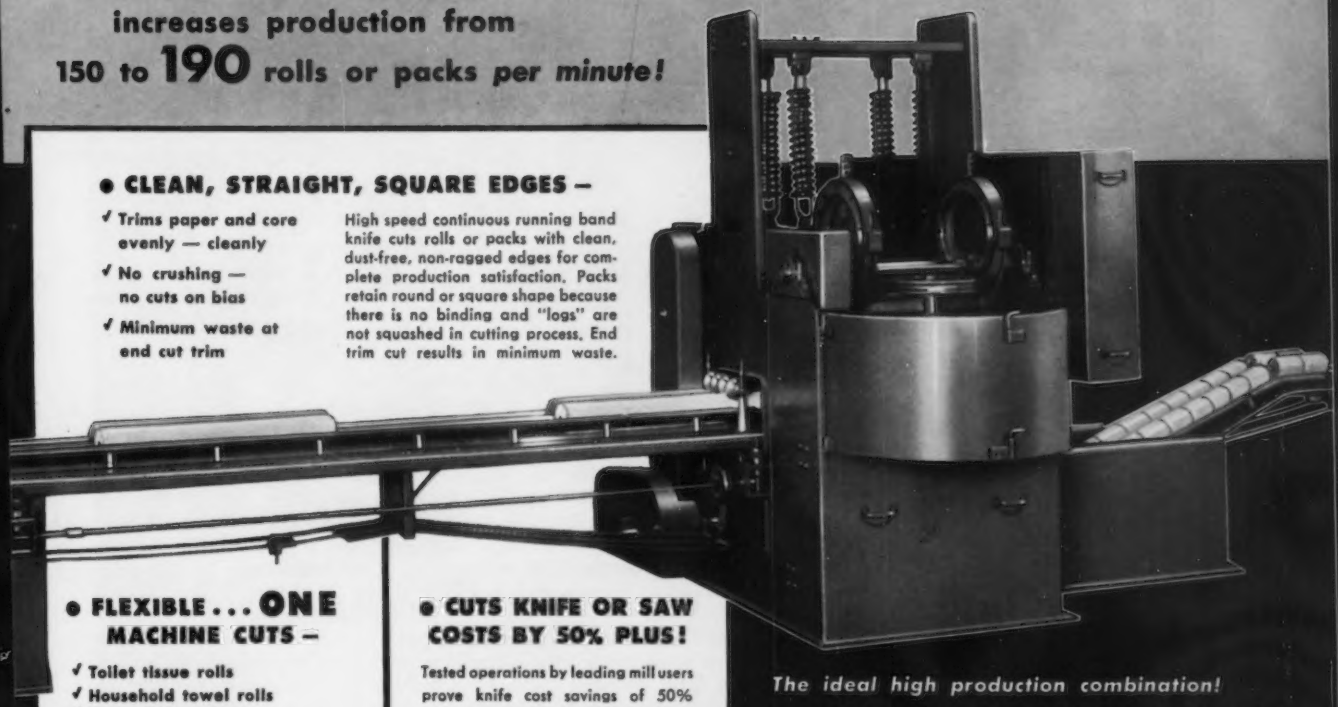
A case of tissue every 33 seconds!

Hudson Sharp's NEWLY IMPROVED

PAPER ROLL and PACKAGE CUTTER

increases production from 150 to 190 rolls or packs *per minute!*



• CLEAN, STRAIGHT, SQUARE EDGES –

- ✓ Trims paper and core evenly — cleanly
- ✓ No crushing — no cuts on bias
- ✓ Minimum waste at end cut trim

High speed continuous running band knife cuts rolls or packs with clean, dust-free, non-ragged edges for complete production satisfaction. Packs retain round or square shape because there is no binding and "logs" are not squashed in cutting process. End trim cut results in minimum waste.

• FLEXIBLE . . . ONE MACHINE CUTS –

- ✓ Toilet tissue rolls
- ✓ Household towel rolls
- ✓ Interfolded towels
- ✓ Interfolded tissues and other paper products

A single H-S cutter can be furnished to handle various types and sizes of products. Changeover parts are reasonable in cost and only nominal downtime is required to switch production. There's no need to have a separate cutter for each type of product you produce. This means important savings to you in capital investment, labor and space.

• CUTS KNIFE OR SAW COSTS BY 50% PLUS!

Tested operations by leading mill users prove knife cost savings of 50% and more! Exclusive H-S, *low cost* endless band knife 17' long x 3½" wide lasts considerably longer than conventional types. Knife maintains peak cutting efficiency throughout its life because it is continuously sharpened by automatic grinding wheels while running. *It need never be removed* until completely worn and ready for discard.

The ideal high production combination!

H-S Paper Roll and Package Cutter
and **60-B Automatic Roll Winder**

Hudson Sharp's 60-B Roll Winder reduces jumbo rolls to finished rolls at speeds up to 1200 FPM *— with new, positive, "CLEAN-CUT" sheet perforations.* Handles web widths to 93". Automatic, progressive winding plus finished roll stripping and the most accurate sheet or measured roll count are just some of the standard features. Automatic core loading attachment available. Elimination of slitters for use with log cutter speeds output reduces web breakage and minimizes downtime. Get the complete facts, now!

New mechanical innovations have increased roll and package production from *150 to 190 per minute!* . . . A highly important factor in today's automation production. Two lanes of products are fed, cut and delivered simultaneously — in length cuts of 4" to 12" in ½" increments — log diameters of 4" to 5½". Can be used independently or in-line with automatic roll winders. Heavy-duty construction and counterbalanced rotary and eccentric motion provide smooth, dependable, trouble-free operation. Write today.

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FOOD MACHINERY AND CHEMICAL CORPORATION
FMC Packaging Machinery Division
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AVAILABLE FOR PROMPT SHIPMENT

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(Tributyl Phosphate)

- *Tankcars*
- *Tanktrucks*
- *Drums*

IMPORTANT USES:

ANTI-FOAM AGENT

TBP is one of the most efficent chemicals for preventing undesirable foaming in—

THE
1. Manufacturing Process
2. Can Filling Operation
3. Final Application

OF
1. Synthetic Resin Emulsions (paints, etc.)
2. Paper Coating Compounds
3. Adhesives
4. Inks
5. Textile Sizings
6. Detergent Solutions
7. Many Other Systems

WITH
1. Low Cost (in one application as little as one-drop in a one-pint can before filling with a resin emulsion gave 20% more cans per minute than before.)
2. Practically no residual odor.

SOLVENT METAL EXTRACTION

TBP is widely used for the solvent extraction of certain metals and rare earths. At present, in this field, the largest use is associated with the atomic energy processes both in the initial preparation of the ores and the recovery of spent reactor fuels. Our TBP meets the AEC specifications.

OTHER USES

A high boiling solvent for most natural gums and synthetic resins for lithographic inks, etc. TBP is a recommended solvent with excellent blending power for preparing concentrates of 2-4D acid.

TBP is non-corrosive, non-flammable, with a pour point of <—80°C. and a vapor pressure of only 7.3 mm. Hg at 150°C. These properties suggest its use as a functional fluid for a variety of applications: such as a heat transfer medium.

MAY WE SUGGEST you also investigate KP-140 (tributoxyethyl phosphate) as an anti-foam agent.

FOOD MACHINERY AND CHEMICAL CORPORATION

Chemicals & Plastics Division

161 East 42nd St., New York 17, N. Y. Dept. PTJ

PTJ NEWS OF SUPPLIERS

Sprout, Waldron & Co., Inc., Muncy, Pa., has placed in operation what is believed to be one of the most modern testing laboratories available to industry today in a modern four story building having 25,000 square feet of floor space, located only one block from the main manufacturing plant.

In accordance with a most carefully considered study of the requirements for an ultra modern laboratory, that would most nearly approach actual in-plant conditions, full size commercial machines are installed in such a way that sufficient volumes of material can be handled to give most accurate capacity and finished product data.

To operate the laboratory a permanent experienced staff is maintained and in addition field servicemen are being used in a dual role to bring to the laboratory the experience gained in the field working with actual customers' problems, thus applying that experience to the solution of new problems.

All laboratory work is ultimately reviewed by one of the engineering staff and each test is summarized in a written report, a copy of which the customer receives at the conclusion of the test. Results are strictly confidential. The laboratory is run on an appointment basis and customers are invited to participate in their test work. Service is on a fee basis, depending upon the extent of the service performed.

Freeport Sulphur Co., New York, has elected Thomas R. Vaughan vice president and general counsel and John C. Carrington vice president of sales.

Mr. Vaughan joined Freeport's legal department in 1942. He was elected assistant secretary of the company in the same year and assistant vice president in 1947. In 1950 he became vice president and, in 1956, general counsel for the company's nickel activities.

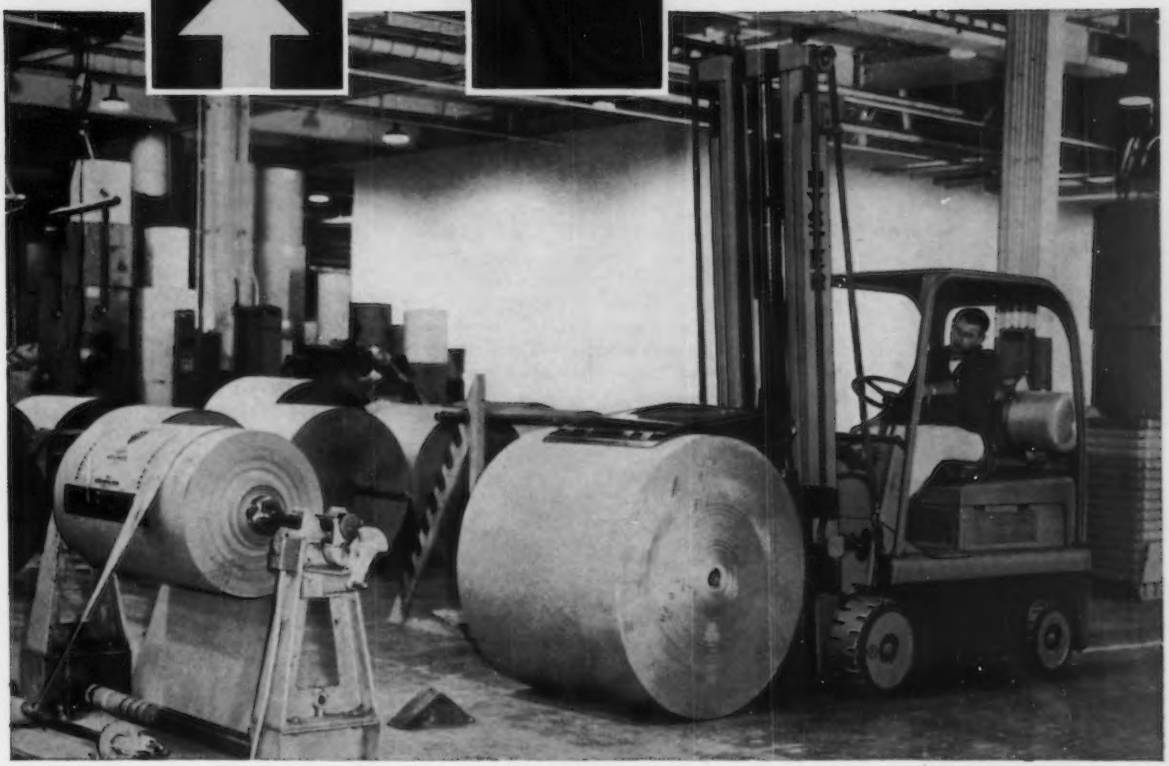
Mr. Carrington joined the company in 1939 as assistant to the vice president. He was made director of personnel relations in 1945 and director of public relations in 1946. In 1947 he was elected assistant to the president and, in 1952, vice president.

Dodge Manufacturing Corp., Mishawaka, Ind., is extending international operations into the European Common Market area with the acquisition by Dodge Manufacturing International A. G. of 40 per cent ownership of a new company in Northern France known as Colmant, Cuvelier, Dodge, S. A.

Control of the new company, which recently purchased a factory in Lomme, France, is shared with the firm of Colmant & Cuvelier, of Lille, France. Colmant & Cuvelier has been licensed to manufacture and sell Dodge mechanical power transmission products since 1955.

The new factory, strategically located near the Belgian border and about 50 miles from the seaport cities of Dunkerque, Calais and Boulogne,

HYSTER



Precision handling
for Crown Zellerbach —

HYSTER® has it!

Hyster lift trucks speed in-process and warehouse handling at Crown Zellerbach Corporation's multiwall bag plant, Antioch, California.

Compact design on cushion tires—power steering standard—ideal for paper plant operations.

Exclusive Monotrol control*—safer, faster, more productive.

Easiest trucks to service and maintain.

Call your Hyster dealer or write for "Hints on Handling for the Paper Industry."

*Optional

INDUSTRIAL TRUCK DIVISION—Lift trucks, mobile cranes, straddle carriers
TRACTOR EQUIPMENT DIVISION—Construction and logging equipment
MARTIN TRAILER DIVISION—Heavy machinery hauling trailers
INTERNATIONAL DIVISION—Overseas manufacturing, sales and service

Factories: Portland, Oregon (Home Office) • Danville, Ill. • Peoria, Ill. • Kewanee, Ill. • Nijmegen, The Netherlands • Glasgow, Scotland • Sao Paulo, Brazil • Sydney, Australia (Licensee)

HYSTER COMPANY
INDUSTRIAL TRUCK DIVISION
P. O. Box 847 • Danville, Illinois

will be used for the manufacture of Taper-Lock sheaves and other Dodge products. Claude Cuvelier, president of Colmant & Cuvelier, will direct the operations of the new factory with the assistance of his son, Claude C. Cuvelier, Jr., and George Tacquet, general manager. Arthur Terry III, as European manager of Dodge International, will represent Dodge interest in the operation of the new company.

R. N. Prince

G. H. Gill, III

H. Strauss

J. R. Alexander

Rust Engineering Co., Pittsburgh, Pa., announces that after August 15 the new address of its New York office is Room 1910, 9 Rockefeller Plaza, New York 20, N. Y.

C. W. Churchill, Jr., is Rust's representative in charge of New York office and sales in the New England States. He is assisted by John F. Hurley, who handles construction specialties, such as chimney and soil compaction work.

The New York office of Rust Engineering has been located in the Lincoln Building on 42nd Street for over 20 years.

Huyck Felt Co., division of Huyck Corp., Rensselaer, N. Y., announces the promotion of George H. Gill, III, to the position of assistant sales manager. Mr. Gill was graduated from the Pulp and Paper School at Syracuse University and has worked as a Huyck field service and sales engineer for almost 10 years. In his new capacity he will utilize his practical knowledge of papermaking and his experience in machine clothing to serve paper mills throughout the country. He will work out of Huyck's Rensselaer, N. Y., office.

Ralph N. Prince, a veteran of almost 25 years of association with the paper industry, will replace Mr. Gill as the Huyck Felt sales engineer for Ohio and portions of Indiana, Pennsylvania, West Virginia, Kentucky and Tennessee. Mr. Prince is a chemical engineer from the University of Maine and was previously employed by Fort Orange Paper Co. and American Cyanamid Co. He knows practical mill operations and has several years' experience in felt application as a Huyck field service engineer.

Walworth Co., New York, N. Y., has appointed Hellmuth Strauss vice president and general sales manager of the parent company. Walworth is a leading manufacturer of valves and fittings.

Mr. Strauss will be returning to the company he served as an executive and board member for more than 25 years before he left in 1957. Harold Brown, vice president and general sales manager, has resigned.

New Jersey Zinc Co. has announced the election of James R. Alexander as vice president. He will be in charge of the sales of the company's products, succeeding Robert G. Kenly who will assume new administrative duties.

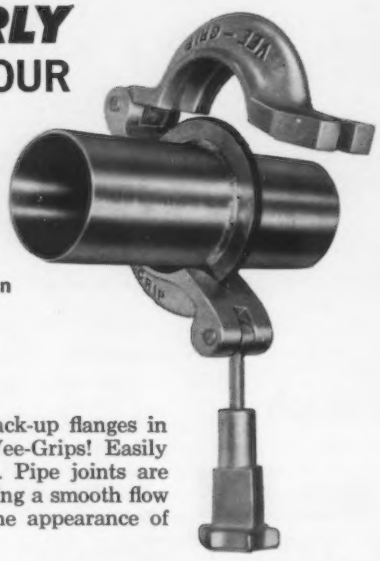
Formerly vice president-sales of H. K. Porter Co., Inc., Thermoid Division, Trenton, N. J., Mr. Alexander has had over 20 years' experience in sales work. Upon graduation from Kenyon College in 1935, he started his career in the sales organization of The Glidden Co. in Cleveland.

He became a sales representative for Quaker Rubber Co. in 1944. When that company was acquired by H. K. Porter Co. in 1949, Mr. Alexander was named district manager for the Cleveland and Detroit areas and in 1952, general sales manager. He was elected vice president-sales of the Thermoid Division in 1958.

Pacific Lift Truck Co. has been appointed exclusive Yale representative in Southern California according to a joint announcement by Horace H. Fritz, III, president of Pacific Lift Truck, and Louis W. Jander, general sales manager of Yale Materials Handling Division, The Yale & Towne Manufacturing Co. The appointment became effective July 1.

As franchised representative, the West Coast company will assume management of the former Los Angeles branch of Yale & Towne. Pacific Lift Truck will continue sales and service, uninterrupted, from the same modern facilities which were used by the Los Angeles branch at

INSTALL **OVERLY** VEE-GRIPS IN YOUR STOCK LINES



- A tight seal in seconds.
- Pipe is held in perfect alignment.
- Weigh less and cost no more than ordinary back-up flanges.
- Available for 3", 4", 6", 8" and 10" tube and pipe.

Save time! Replace ordinary back-up flanges in your stock lines with Overly Vee-Grips! Easily put on or taken off in seconds. Pipe joints are held in perfect alignment, assuring a smooth flow of stock. They also improve the appearance of your stock line installations.

Write for catalog and prices

Serving the paper industry in custom metal fabrication of engineered air systems — machine hoods — Gardner Dryers—Westinghouse Sturdevant fans and steam coils — stock pipe — distributor rolls — suction boxes — white-water pans — head boxes — tanks.

OVERLY'S INCORPORATED

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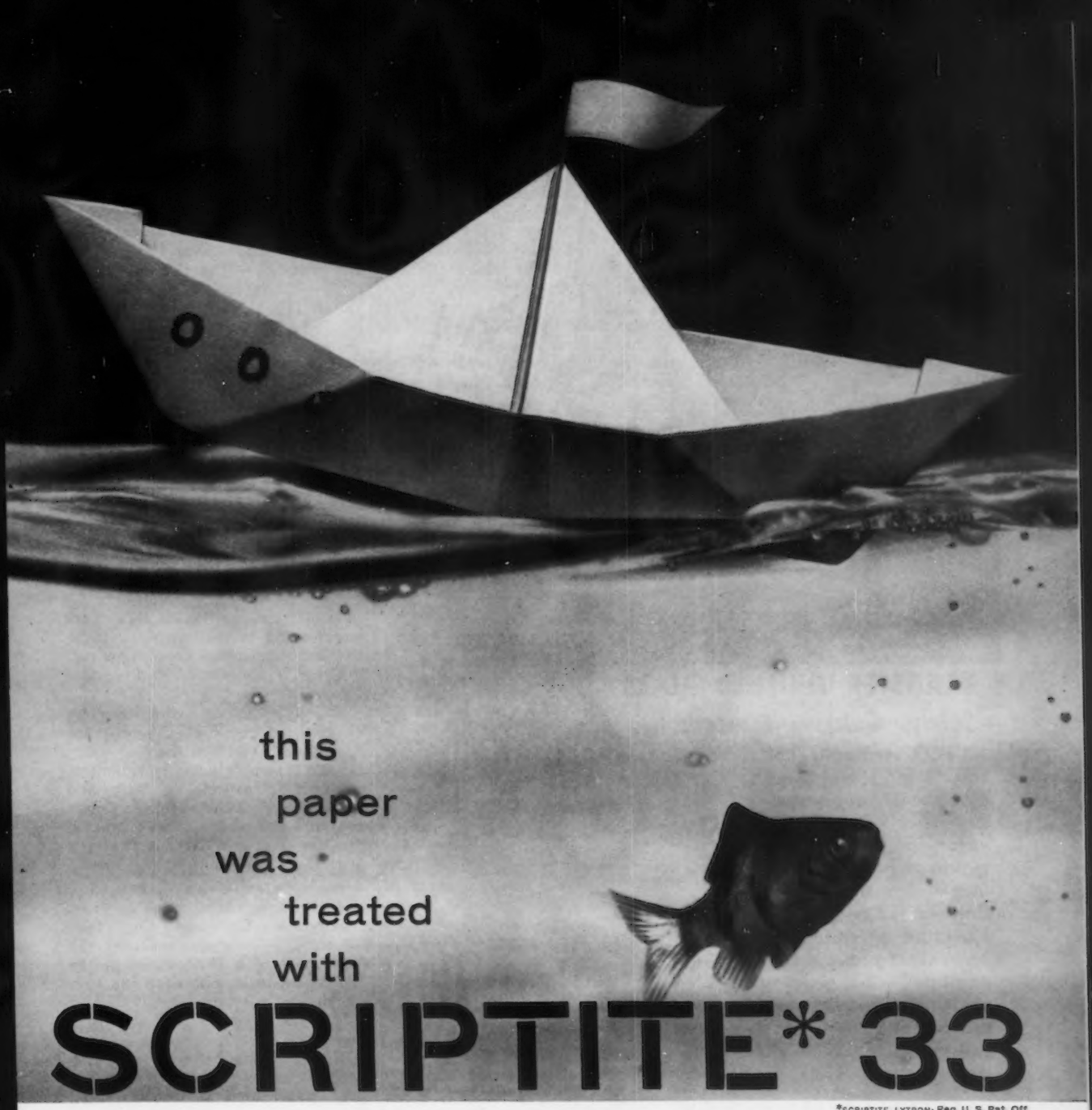


*SCRIPTITE, LYTRON: Reg. U. S. Pat. Off

Monsanto Scriptite 33—a melamine resin supplied as a dry fine powder—imparts high wet strength to many paper products. It increases wet bursting strength, dry tensile strength, wet rub resistance . . . improves dry stiffness, dry mullen, folding endurance, wax pick, dimensional stability. Monsanto offers a wide range of Scriptite resins for increasing the wet strength and water resistance of paper and board. Also available are Monsanto Lytron resins, water dispersal resin polymers, for efficient paper and board coating. For complete information of Scriptite 33 and other Monsanto paper resins, write Monsanto Chemical Company, Plastics Division, Room 748, Springfield 2, Mass.

Monsanto

MONSANTO DEVELOPER IN **PLASTICS**

The Monsanto line of paper resins also includes: **SCRIPTITE 40** *urea type wet-strength resin.* **SCRIPTITE 54** *water-insoluble adhesive for paper and liner board.* **SCRIPTITE 55** *low viscosity resin for improved water resistance, wet and dry rub resistance with easy handling.* **SCRIPTITE 52** *in combination with formaldehyde, gives water resistance to folding boxboard and jute liner.* **SCRIPTITE 50** *unsurpassed printability, improved surface characteristics on boxboard.* **SCRIPTITE 45** *new thermosetting resin for stabilization of paper.* **LYTRON*** *water dispersal resin polymers for coatings.*

5711 East Olympic Boulevard. It will also operate the Yale San Diego sales and service location at 4410 Kearny Mesa Road.

Both locations will have full sales and service departments staffed with factory-trained personnel. Pacific Lift Truck Co. will continue the specialized type of servicing organization which was begun by Yale to answer the needs of lift truck owners whose equipment requires immediate servicing or maintenance.

Officials of the new company include Mr. Fritz as president and general manager, Jerry W. P. Schauffler as sales manager, and L. F. Ketter as service manager. Pacific Lift Truck will cover the California counties of Los Angeles, Orange, Riverside, San Bernardino, Inyo, Ventura, Santa Barbara, San Louis Obispo, San Diego and Imperial.

Mr. Fritz has been in the materials handling field since 1953. He is a graduate of the University of Pennsylvania.

Union Tank Car Co., Chicago, Ill., has announced that it is joining with two of Belgium's leading plate fabricating concerns in a new enterprise which is expected to play a major part in the metal fabrication industry of the European Common Market.

Union's new affiliate, to be known as Compagnie Graver, S. A., will offer the full line of conservation equipment and other products developed by the Graver Tank & Mfg. Co., division of Union Tank Car Co. Graver Tank has been a leader in the design, fabrication and erection of tanks, pressure vessels and steel plate construction of all types.

Union Tank Car will increase its existing investment in the well-known Brussels concern, Ateliers de Construction de Willebroek.

Compagnie Graver will have assets of over 150 million Belgian francs (more than $3,000.000) with headquarters in Brussels. It will operate three plants in Belgium, specializing in a full range of carbon steel, stainless steel and nonferrous metal fabrication.

M. W. Kellogg Co., a New York engineering and construction firm. has announced the appointment of Charles W. Cassell to its Pulp and Paper Division.

Mr. Cassell, an engineering graduate of Purdue University, has specialized for more than 30 years in the chemical and mechanical engineering aspects of pulp and paper mill design. Before his recent appointment, Mr. Cassell directed his own consulting engineering firm, C. W. Cassell & Associates of Ann Arbor, Mich.

Jefferson Chemical Co., Inc., Houston, Tex., announces that the final phase of a realignment of the Technical Services Division has been completed.

L. J. Garrison has been appointed supervisor, Field Services Section, and with his staff will be located at Jefferson's Research and Development Laboratories in Austin, Tex. This group is charged with planning and supervising a program of technical service to the field sales force with special emphasis on customer service work and maintaining close liaison with plant laboratory and the marketing department.

Mr. Garrison, a graduate of Rensselaer Polytechnic Institute in chemical engineering, received his Master's degree from the University of Michigan. Joining Jefferson in 1952, he received training in the New York office, the Austin Laboratories, and the Port Neches Plant. His principal technical activities with Jefferson have been in the field of surface-active agents.

WAUSAU PAPER MILLS
Brokaw, Wisconsin

CHARMIN PAPER PRODUCTS CO.
Cheboygan, Michigan division
on #9 paper machine

TRANSFER FINISHED ROLLS

Safely, Quickly, Economically

MURCO HYDRAULIC ROLL LOWERING TABLE

MURCO Hydraulic Roll Lowering Table does away with complicated, expensive Recessed Elevators or cumbersome overhead hoist arrangements. Transfer of the finished roll is a simple and safe operation . . . prevents paper roll damage . . . no bending or breaking winder shafts as the shaft is never used as a lifting arbor. Compact, MURCO Hydraulic Roll Lowering table occupies small floor space . . . rigid construction positively prevents movement when table is loaded. Made in sizes practical for any normal size paper roll.

SPECIAL "WELL" DESIGN

A special design is the "well" that is part of the MURCO Hydraulic Roll Lowering Table, enables you to have a spare winder shaft always ready to put on without removing the winder shaft from the finished roll of paper. The "well" does not interfere in any way with the table's operation . . . the shaft lies flush in the "well" until taken out for use. MURCO Roll Lowering Table illustrated is built to handle a roll of paper 60" in diameter, 14' long, weighing 14,000 lbs. . . . distance of machine to floor is 50".

Write: **today for quotation on size to meet your plant operation . . . state height from floor to winder shaft; lengh of paper roll; diameter of paper roll; weight of typical paper roll.**

D. J. MURRAY MANUFACTURING CO.

Manufacturers Since 1883 WAUSAU WISCONSIN

Prices of Fibers

MARKET WOOD PULP

THIRD QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$ 82.50/ 90.00	$82.50/ 90.00	§$90.00/ —	§$80.00/ —	§$90.00/ —
Bleached Gw'd	$ 97.50/100.00	$97.50/100.00			
Kraft, Blchd.	‡152.00/160.00				$157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		140.00/ —		
Kraft, Semi-bleached.	140.00/145.00				
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡150.00/155.00	‡150.00/155.00	*155.00/ —	*155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd.	135.00/ —	135.00/ —	†135.00/ —	*135.00/ —	
Sulphite, Unb'l, Gl'sn		140.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

§ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances
‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS
WEEK ENDED AUGUST 2

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	9.00/ —
3	$7.50/7.00	$8.50/7.50	$7.50/7.00	8.50/8.00
4	7.00/6.25	7.25/6.25	6.50/6.25	7.75/ —
5	6.25/5.75	5.75/5.50	6.00/5.50	7.50/7.00
6	5.75/4.75	5.25/5.00	5.25/5.00	6.50/4.50
7	4.75/4.25	4.50/4.00	4.75/4.00	4.25/4.00

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	Aug. 8	Aug. 8	August	August
No. 1 Mixed Paper	$ 7.00/ 9.00	9.00/ 11.00	6.00/ —	11.00/ 13.00
No. 1 News	12.00/ 13.00	10.00/ 11.00	13.00/ —	12.00/ —
Overissue News (Lg. size)	11.00/ 13.00	9.00/ 11.00	18.00/ —	18.00/ 19.00
Mill Wrappers	19.00/ 22.00	13.00/ 15.00	9.00/ —	12.00/ 14.00
Old Corrugated Containers	19.00/ 20.00	19.50/ 20.00	20.00/ —	23.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	30.00/ —	55.00/ —
New Double Kr. Ld. Corr. Cuts	32.50/ 35.00	35.00/ —	35.00/ —	35.00/ —
(Semi-chem. medium)	47.50/ —	47.50/ —	45.00/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	60.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Unprintd.	60.00/ 65.00	65.00/ 75.00	60.00/ —	60.00/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	15.00/ —	32.50/ 35.00
White Newsblanks	47.50/ 52.50	47.50/ 52.50	30.00/ —	55.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	57.50/ 60.00	60.00/ —	70.00/ 75.00
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	70.00/ —	— / —
Hd. White Shvs.	85.00/ 90.00	90.00/100.00	85.00/ —	85.00/ 95.00
Hd. White nv. Cuts	100.00/105.00	105.00/110.00	90.00/ —	110.00/113.00
Col. Tab. Cards	42.50/ 45.00	42.50/ 45.00	45.00/ —	40.00/ 45.00
Manila Tab. Cards	62.50/ 65.00	62.50/ 65.00	65.00/ —	70.00/ —
No. 1 Col. Ledger	35.00/ 40.00	35.00/ 40.00	40.00/ —	27.00/ 29.50
White Ledger	48.50/ 52.50	50.00/ 55.00	50.00/ —	50.00/ 55.00
Mixed Book & Mag.†	— / —	— / —	12.50/ —	— / —
No. 1 Books‡	16.50/ 19.00	14.50/ 16.50	27.50/ —	13.50/ 14.00

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

Felt Facts

PRODUCTION RECORDS BROKEN AGAIN WITH ALBANY FELTS!

Mill Manager Says:

"FELT DRAINAGE BEST IN HISTORY"

The Actual CASE HISTORY

J. W. Pearl, Vice President of Globe Roofing Products Co. Inc., Chicago, Illinois knows what close cooperation between an Albany Felt sales-design team and his personnel can mean. Mr. Pearl reports that a newly designed Albany Felt had better drainage throughout its life than **any other felt in the history of his mill.** They make grades ranging from 27 pound roofing to 95 pound automotive.

SYNTHETIC + J3

Besides just the right blending of fibres, and correct felt design for the particular position, Mr. Pearl says that the 47% synthetic content and J-3 treatment contributed greatly to the felt's excellent drainage characteristics.

New Tonnage Record, Too!!

This felt produced a record of 4,257 tons, bettering the old production standard by more than 1,400 tons during its 55½ day run. The next felt on the position, of identical design, ran over 68 days according to Mr. Pearl, and gave the same trouble free operation and high rate of production.

We can help you get improved performance and top production.

Talk it over with your Albany Felt Sales Engineer

AF ALBANY FELT COMPANY ALBANY, N. Y.
The World's Largest Manufacturer of Paper Machine Felts

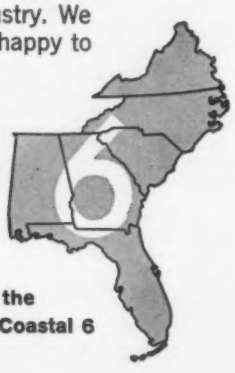
Coming Soon!
200 MORE

Giant-Size
ACL WOOD CHIP CARS

TO SERVE THE PULP & PAPER INDUSTRY

Because of your overwhelming acceptance of our first 200-car fleet of jumbo-size 70-ton wood chip cars, Coast Line is building 200 more to serve you. These cars represent just one more of the many ways Coast Line works to meet the individual shipping needs of our friends and customers in the pulp and paper industry. We appreciate your patronage and will be happy to work with you at any time to help you solve your particular shipping problems. Why not give us a call.

"Thanks for Using Coast Line"



ATLANTIC COAST LINE RAILROAD

...serving the Southeast Coastal 6

PJT NEW LITERATURE

A-C Lift Trucks
Series F

Tells the design, engineering, construction and operating stories of the "F" series truck which come in 3,000, 4,000 and 5,000-lb. capacity ranges. Catalog BU640. Specification Sheets 641, 642 and 643 respectively are available for these ranges. Allis-Chalmers Mfg. Co., Engine-Material Handling Div., Milwaukee 1, Wis.

Log Stacker
Series F

Provides photographs and technical information about the improved 30-ton capacity Series F log stacker. Bulletin 105B. R. G. LeTourneau, Inc., 2399 South MacArthur, Longview, Tex.

Magnaflow
Pumps

Provides information on this centrifugal pump with canned stator and flow-through type rotor-impeller. Also tells how it works when mounted in any position in a pipe line and gives complete specifications. Bulletin M-60. Corley Co., Inc., 685 Myrtle Ave., Boonton, N. J.

Metal-Clad
Switchgear

Describes in detail its completely redesigned line of 4160-volt metal-clad switchgear. Also includes ratings and dimensions. Bulletin 2801-2A. I-T-E Circuit Breaker Co., 1900 Hamilton St., Philadelphia, Pa.

New Power for
Pulpwood Profits

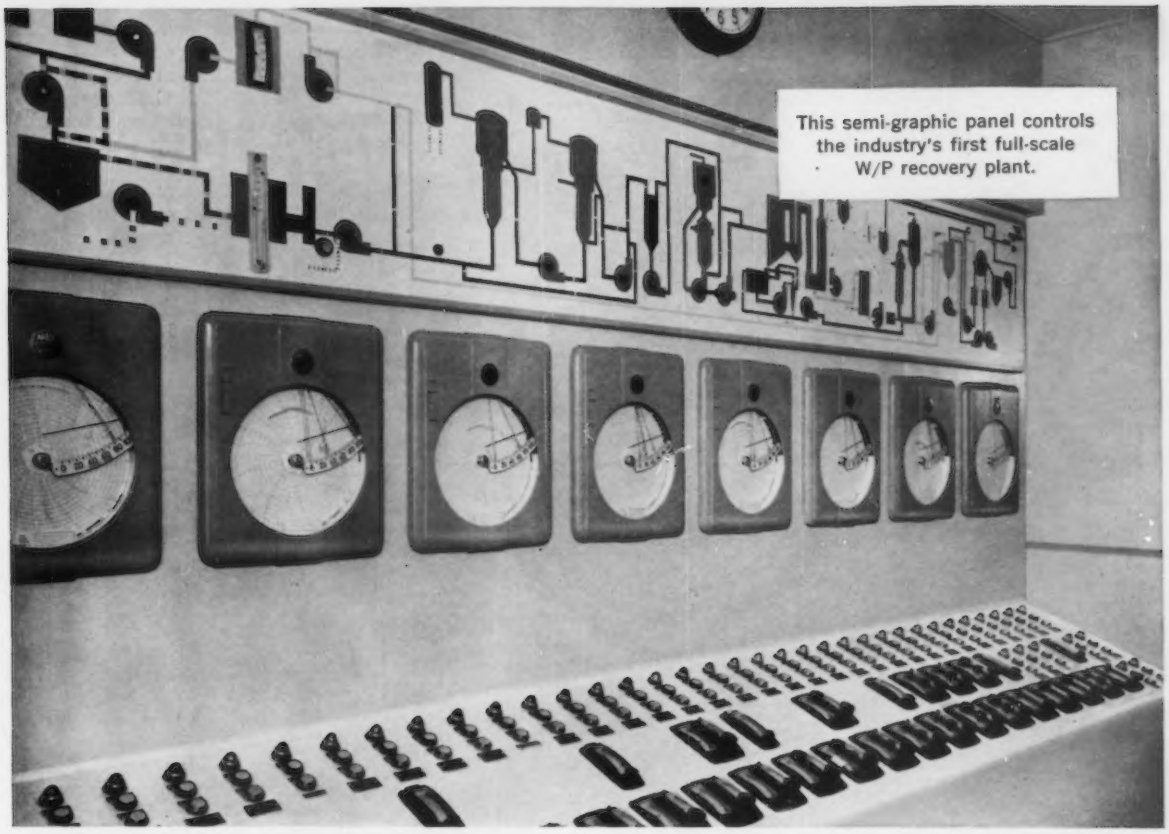
Covers new track-type tractor models which include the D4C, D6B and the D8H. Also describes both track and wheel-type Traxcavators and new Cat motor graders. Form D017. Caterpillar Tractor Co., Peoria, Ill.

Thymotrol
Speed Variator

Contains information and data on this general purpose speed variator, including details of standard and optional features. Bulletin GEA-7018. General Electric Co., Schenectady 5, N. Y.

Versatile Sodium
Silicate Adhesives

Tells how sodium silicate adhesives are particularly adaptable to a variety of materials. Folder available on letterhead request. Philadelphia Quartz Co., 1158 Public Ledger Building, Philadelphia 6, Pa.



This semi-graphic panel controls the industry's first full-scale W/P recovery plant.

NERVE CENTER for first installation of W/P recovery process

This semi-graphic panelboard is regarded as one of the major advances in process instrumentation for the pulp and paper industry.

The reasons:

**A New Process is Involved:*

This panelboard is located at the new recovery plant of Consolidated Water Power & Paper Company, Wisconsin Rapids, Wis. It is the nerve center for the first commercial-scale installation of the Western Precipitation Corporation's new recovery process. Long sought by the industry, the W/P system provides a new approach to processing both acid sulphite and semi-chemical spent liquors.

**Panel Represents Advanced Automation*

The panel is no mere mounting for controls, recorders and control stations . . . it provides an exceptionally advanced degree of intelligence to reduce manpower required in the operation of a highly complicated processing system.

This comprehensive installation is another example of how Bailey is working with pulp and paper processors toward greater degrees of automation, efficiency and quality control.

Put Bailey's 40 years of engineering leadership to work for you. Your Bailey Engineer will be happy to review your plant operation and to suggest applications that will bear immediate return. Check phone book for nearest Bailey District Office, or write direct to our Pulp and Paper Division.

**For further information,* write to the Bailey Meter Company for Reprint No. C-30, "Consolidated Demonstrates Its Recovery of Spent Sulphite Liquors."

P150-1

PULP AND PAPER DIVISION

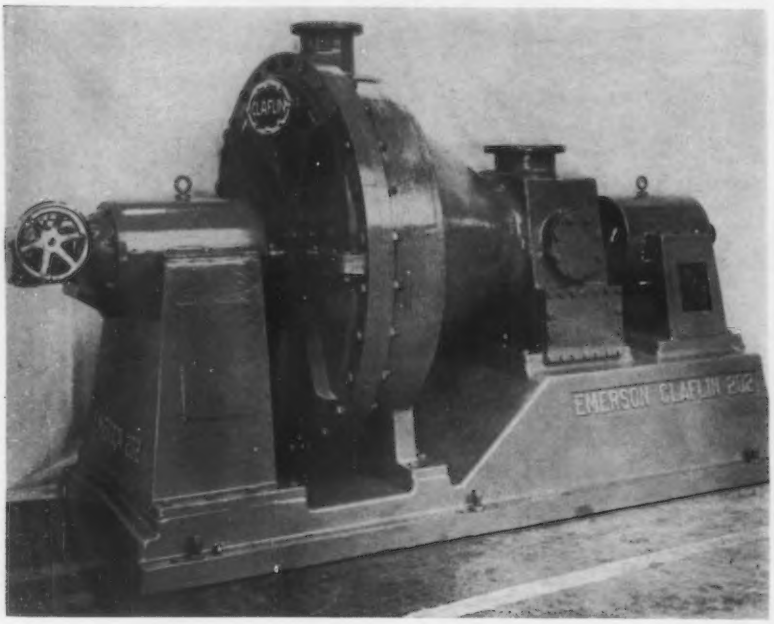
BAILEY METER COMPANY

1056 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal

BAILEY METERS

NEW EQUIPMENT & SUPPLIES



Claflin Refiner for 15-75 T/D Applications

Another conical refiner, the Claflin 202, has been released to the market by its manufacturer, The Emerson Manufacturing Co., division of John W. Bolton & Sons, Inc. Incorporating all the features of the Emerson Claflin 303, which was introduced one year ago, the 202 model is designed for those mills having need for a refiner of smaller capacity, between 15 and 75 tons per 24 hours. While lighter in weight and dimensionally smaller than the model 303, it can withstand operating pressures of 100 p.s.i.

Other features remain the same: oil mist lubrication, which automatically feeds each of the two bearings; microfeed plug adjustment calibrated for accurate plug positioning and movement to within .0005 inches; split design in the reinforced head to assist in changing fillings; center or tangent discharge pipes cast as part of the shell housing to eliminate the necessity of dismantling the piping when disassembling; tangent cleanout and sand trap.

The model 202 also comes equipped with one-setting Fast's Full Travel coupling which requires no change of setting during the life of a filling. All types of tackle can be used and changed without disturbing the bearings or packing box assemblies, report Emerson spokesmen.

Air Curing Silicone Waterproofs Paper and Board

A durable air-curing silicone water repellent for paper has been developed by the Silicone Products Department of the General Electric Co. The material, SS-4024, is a solvent solution of silicone polymers and other film-forming components which imparts durable water repellency to paper while at the same time providing waterborne spot and stain resistance, unimpaired air circulation and rapid drying. It also has improved low temperature flexibility and resists oils, greases and alkali salts.

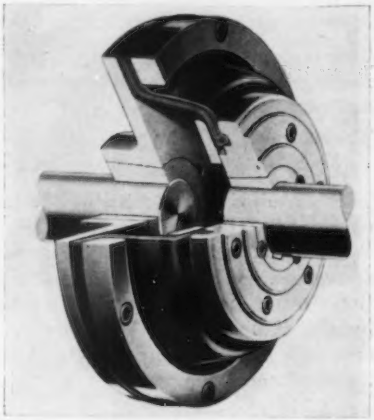
Since SS-4024 does not require catalysis or thermal cure (it will develop full water repellancy within 24 hrs.), it can be applied by spraying, brushing, swabbing, dip and roll coating without provision for heat after application except, if desired, to flash off the solvent. In most paper and paperboard applications it can be used in concentrations of from 5 to 15 per cent in a solvent formulation.

Other properties are: 50 per cent active ingredients, mineral spirits solvent, 7.3-7.5 lbs. per gallon; flash point 75°F; diluted with common aliphatic, aromatic and chlorinated hydro-carbons. It has a storage stability of over 6 months when water is excluded. Since SS-4024 is very water sensitive, presence of water will cause gradual precipitation. SS-4024, therefore, cannot be emulsified. Further data can be obtained from Silicone Products Dept. General Electric Co., Waterford, N. Y.

High Speed Couplings With Four-Way Flex

A pan-shaped rubber element with four-way flexing is the feature of two cushion type couplings being introduced for high speed or high torque applications by Dodge Manufacturing Corp., Mishawaka, Ind. Like the original standard couplings, both types are recommended to accommodate, either singly or in any combination, angular and parallel shaft misalignment and end float, to absorb torsional vibration, and to cushion shock loads.

The Para-flex High Speed coupling consists of the flexible member sup-



ported on one side by a clamp-ring flange just like those furnished with the tire-type coupling, and with its larger side bolted to a steel disk. Both the flange and disk are equipped with Taper-Lock bushings. Designed for speeds up to 5230 r.p.m., the coupling may be used with electric motors or internal combustion engines.

The Para-flex Flywheel type coupl-

GBS+ClO2
+R&D=
WONDERWHITE

Now, at last, a papermaker's dream come true...

There are a number of pulps which offer high brightness... There are others which offer high opacity.

But now Gaspesia is producing WONDERWHITE: a pulp which features *high brightness and high opacity*.

Gaspesia, with its Northern Spruce, has always been known for high opacity pulp. Now, by using Chlorine Dioxide, the highest level of brightness has been achieved—with *no loss in opacity*.

Also, you will find that WONDERWHITE has the forming properties found only in Northern sulphite pulps. Why not order a trial shipment and let WONDERWHITE tell its own story?

GASPESIA SULPHITE COMPANY LTD.
CHANDLER, QUEBEC, CANADA

SOLD BY: **Anglo Paper Products, Ltd.**
2055 Peel Street, Montreal 2, Quebec

SALES REPRESENTATIVE IN THE UNITED STATES:
Northeastern Paper Sales, Inc.
400 Madison Avenue, New York 17, N.Y.

ing has its larger side bolted directly to the flywheel of an internal combustion engine instead of being supported by a taper-bushed steel disk. These couplings are offered in sizes to fit the bolt circles of most standard SAE flywheels up to 19¼ inches diameter.

Flexing members of both types are said to absorb noise-producing vibrations, and serve to prevent the flow of electrical current between shafts; there is no metal to metal contact. The couplings require no lubrication. High Speed and Flywheel couplings are now offered in sizes to deliver up to 47 h.p. per 100 r.p.m. and with Taper-Lock bushings to fit shafts up to four inches in diameter. Hubs can be ordered bored to size to fit larger shafts.

Portable Transceiver Has Many Uses In Mill

A small portable 100 milliwatt crystal controlled radiophone with receiver squelch has just been released by Morrow Radio Manufacturing Co., Salem, Ore. It is called the VP-100 and has an average range of one half to three miles. Operating on any one of the 22 channels of the citizen's band, it is

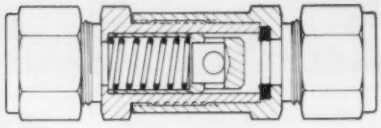
fully transistorized and completely self-contained with exception of the lapel microphone. This unit may be operated by anyone, no license or examination is required. Two or more VP-100 units may be operated in communication or in conjunction with base stations of 100 milliwatts of power without licensing. When used with 5 watt installations the class "D" license requirements apply to all units.

Power is provided by one 9-volt battery and may be replaced through panel in back of unit. Circuity is printed on fiber-glass. The VP-100 case is 1/16 inch thick drawn aluminum, measuring 3 inches wide, 1⅛ inches deep and 6 inches high. Other features include two external jacks for long wire antenna and earphones.

Telescoping antenna can be fully collapsed into case. The extension microphone clips to lapel or operates in the hand, actuating the transmitter with push-to-talk button located on the microphone case. The VP-100 operates with other portable or fixed station citizen's service radiophones of the same channel. Possible applications of this communication system include, plant supervision, intercom systems, production line co-ordination, cranes and lift control, electricians, maintenance, plus other uses.

Poppet Check Valve Features Turbulence Rings

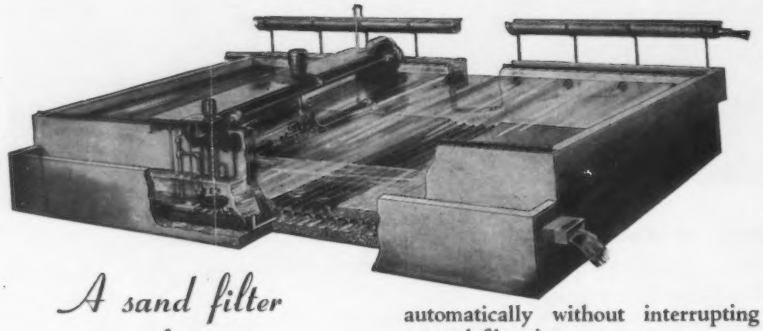
Nuclear Products Co., Cleveland, Ohio, has introduced a poppet check valve in the larger size range for



⅜ inch, ½ inch and ⅝ inch tubing especially for use in instrument, process and control lines to obtain uni-directional flow. This Poppet Check Valve can also be used in fluid service lines to prevent system contamination and equipment damage in the event of accident.

This valve is designed to provide large flow areas for minimum pressure drop. Turbulence rings are incorporated to provide dynamic stability and rapid shut-off. The turbulence action "floats" the poppet in the body to eliminate sticking and chattering usually caused by metal-to-metal friction.

One Quad-Ring of Buna N rubber forms the valve seat to assure bubble tight sealing at low back pressure and also forms the body seal. The in-line body design is combined with Swagelok tube fitting connections to provide compact check valve only 3⅜



A sand filter for **CONTINUOUS** *Water Supply*

The Hardinge Automatic Backwash Sand Filter is a complete departure from standard filtration equipment, in that it backwashes its filter bed automatically without interrupting normal filtration.

The ABW filter in combination with Hardinge flocculation and sedimentation equipment provides complete water treatment for paper mill water supplies. Many "ABW's" are in use in paper plants throughout the U.S.A. and Canada.

A traveling carriage cleans the filter bed intermittently.

Complete specifications upon request. Bulletin 46-A-14.

HARDINGE
COMPANY, INCORPORATED
Main Office and Works • 240 Arch St., York, Pa.
"Hardinge Equipment—Built Better to Last Longer."

NEW YORK
TORONTO
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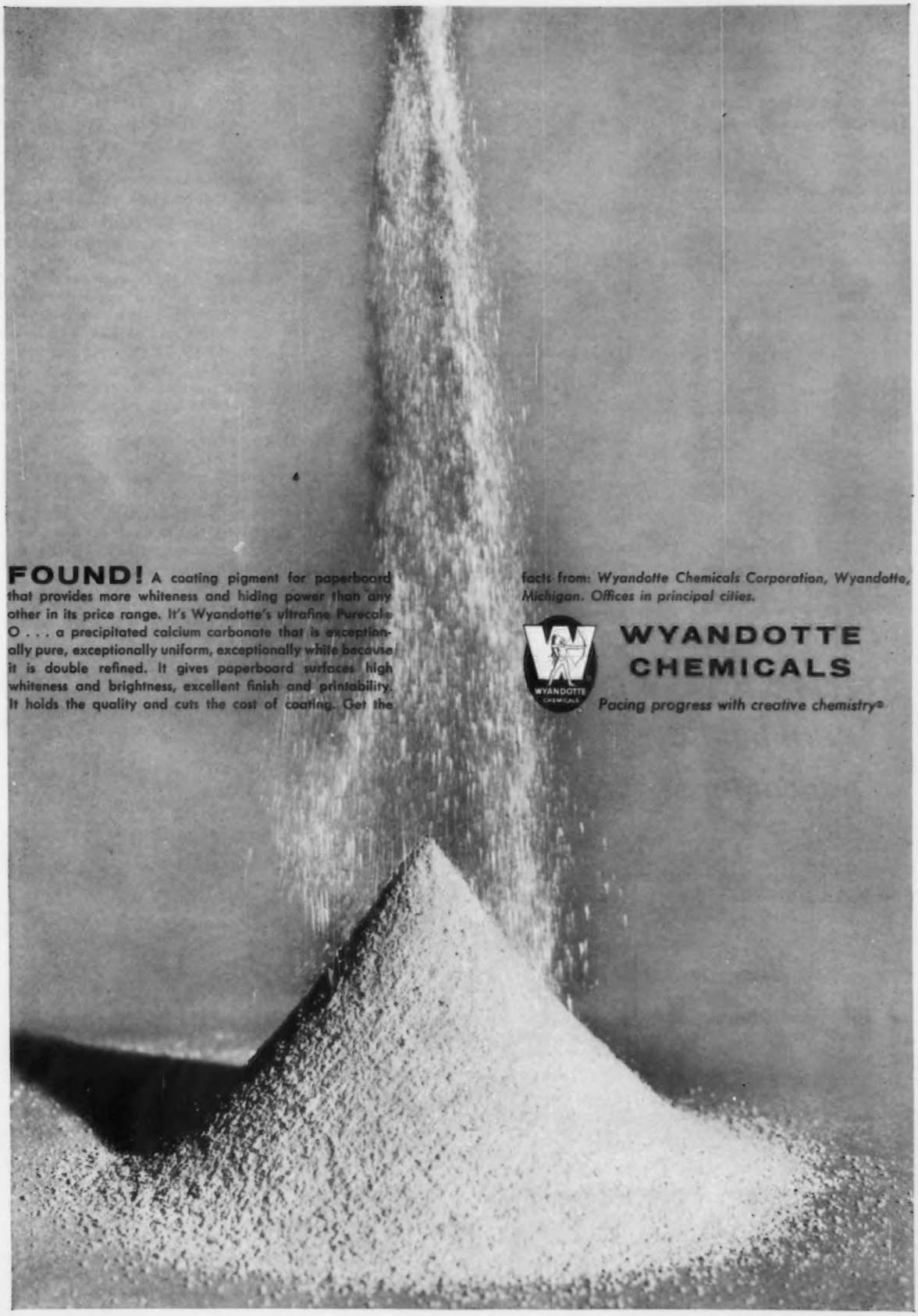
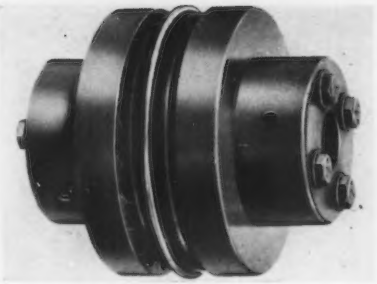

FOUND! A coating pigment for paperboard that provides more whiteness and hiding power than any other in its price range. It's Wyandotte's ultrafine Purecal® O . . . a precipitated calcium carbonate that is exceptionally pure, exceptionally uniform, exceptionally white because it is double refined. It gives paperboard surfaces high whiteness and brightness, excellent finish and printability. It holds the quality and cuts the cost of coating. Get the facts from: *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*
WYANDOTTE CHEMICALS
Pacing progress with creative chemistry®

inches long and eliminates the need for additional tube fittings. Check valves are available in type 316 stainless steel and brass.

Spacer Couplings Have Special Detachable Hubs

"Sure-Flex" spacer couplings are equipped with special detachable hubs that permit the coupling of shafts spread as far apart as 7½ inches, depending on coupling size, reports T. B. Wood's Sons Co., Chambersburg, Pa. Spacer couplings may also be removed without disturbing shaft alignment.

The spacer type consists basically of two flanges and a two-piece flexible rubber sleeve. The teeth of the sleeve halves lock into the teeth of the flanges without clamps or screws, tightening under torque to provide



smooth transmission of power. Shaft ends fit into the hubs. Each hub is attached to the coupling flange by four cap screws.

Spacer "Sure-Flex" couplings are available on special order to fit particular requirements. They are said to tolerate angular misalignment up to 1°, parallel misalignment up to 1/16 inches, free and float up to ⅛ in. Standard couplings range from a minimum stock bore of ⅜ in. to a maximum bore of 3¼ inches. Junior "Sure-Flex" sizes having zinc-alloy flanges and one-piece flexible sleeves have also been introduced for low-cost coupling of shafts up to 1⅛ inches.

Automatic Labeller Also Codes Information on Label

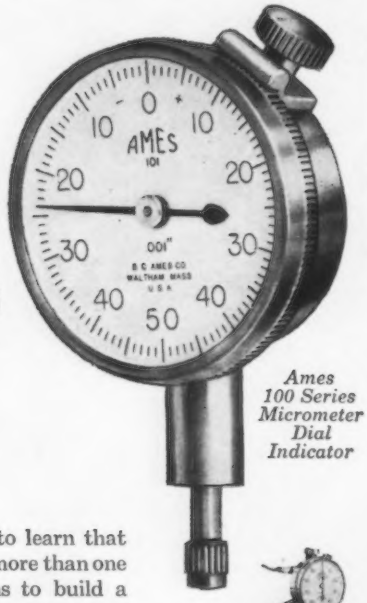
According to Derby engineers, Derby Sealers, Inc., Dispens-A-Ply can automatically remove pressure-sensitive labels in roll form from backing paper and apply them directly to a wide range of products in varying sizes and shapes. The labels are previously die-cut by a converter. Blank bottle caps, jars, cans, prewrapped packages, cosmetic containers and a large number of similar products can new be automatically labelled with this method.

The Dispens-A-Ply features a fully adjustable head mechanism that can be raised or lowered to meet variations in product sizes. In most applications, the mechanism can be installed on many types of existing conveyor systems with a minimum of special work.

The Dispens-A-Ply head mechanism will dispense labels up to 3¼ inches wide at rapid rates of speed, depending on the length of the labels. An innovation is the Dispens-A-Ply's Coding Attachment, designed to print price information, size data and other facts on the labels as they are dispensed.

AMES DIAL INDICATORS

are built by nonconformists



Ames 100 Series Micrometer Dial Indicator

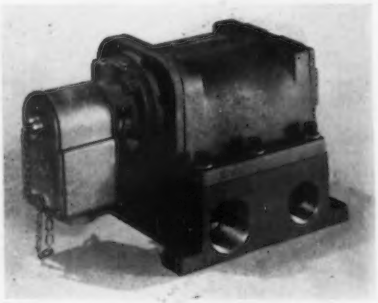
Some people might be shocked to learn that in this day of automation it takes more than one hundred separate hand operations to build a single Ames micrometer. In many respects we are building and assembling these precision instruments exactly as we did fifty years ago.

Why? Because there are some jobs that can still be done *better* by a pair of skillful, sensitive hands than by the best automated machinery made. As long as this fact holds true we'll refuse — for *your* sake — to follow the crowd. For Catalog No. 60 write to: B. C. Ames Co., 55 Ames St., Waltham 54, Mass. — in Canada, H. C. Burton Co., 166 Rebecca Street, Hamilton.

Representatives in Principal Cities

B.C. AMES CO.

MANUFACTURERS OF MICROMETER DIAL INDICATORS AND GAUGES
ACCU-FLOW AIR GAGES • TRANSISTORIZED COMPARATORS



AIR CONTROL VALVE is 2-position, 4-way, poppet type, sub-base mounted. Of basic 1 inch capacity, it meets J.I.C. requirements and is available with ¾, 1 and 1¼ inches N.P.T. ports. Features include replaceable resilient seals cushioning moving parts, a tapered sealing surface, interchangeablity with other 3- and 4-way valves in the line, and lightweight. Hoffman Valves, 2360 West Dorothy Lane, Dayton 39, Ohio.

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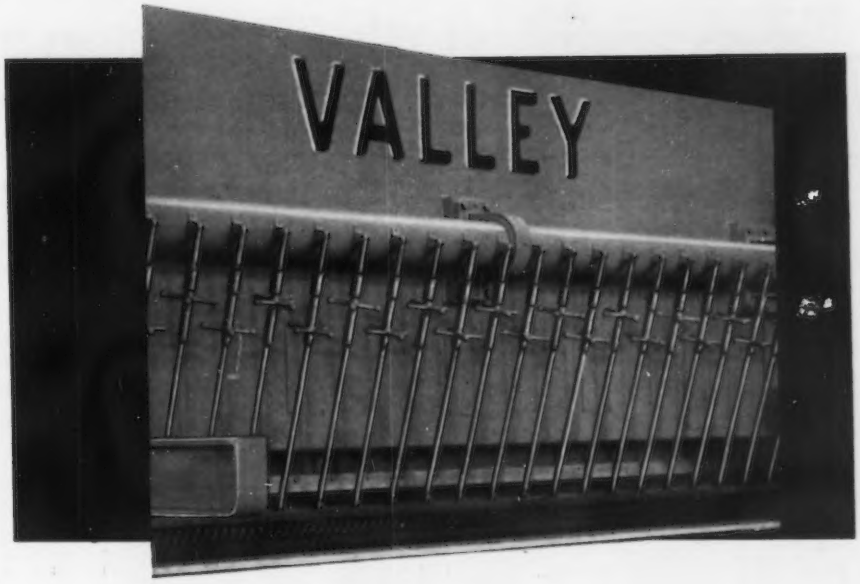

29 different* paper mills will start up NEW stock entrance equipment in 1960...

by... VALLEY

*DOES NOT INCLUDE TWO OR MORE INSTALLATIONS IN ONE MILL

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Subsidiary of Allis-Chalmers Manufacturing Company
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West Coast Representative: E. A. Berry, P.O. Box 958, Longview, Washington
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Whether your problem be Hiring, Selling or Buying, these columns can help you.

Others have—you try it.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

* (Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	July 2	July 9	July 16	July 23	July 30
1960	88.7r	58.7r	83.8r	91.1r	91.2
	July 4	July 11	July 18	July 25	Aug. 1
1959	71.7	71.5	90.3	94.9	94.3

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960'	96.7	97.9	98.3	97.0	97.9‡	96.3‡	—	—	—	—	—	—	—
1959	87.8	90.5	93.2	94.4	95.5	95.6	84.5	96.0	92.4	97.4	96.2	86.6	94.0

‡ Preliminary

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

COMPARATIVE YEARLY SUMMARIES

	1953	1954	1955	1956	1957	1958	1959	1960
Year to Date	94.2	91.5	95.6	99.0	91.8	86.0	91.4	95.9
Year Average	92.3	91.6	96.2	97.9	90.4	87.0	94.0	—

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	July 2	July 9	July 16	July 23	July 30
1960	90	50	74	91	94
	July 4	July 11	July 18	July 25	Aug. 1
1959	82	56	84	94	98

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	93	94	92	—	—	—	—	—	—	—
1959	89	94	95	94	96	96	83	97	92	96	94	80	92

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING July 30, 1960	LAST WEEK ENDING July 23, 1960	CUMULATIVE TO DATE Jan. 1 to July 30, 1960, incl.
% Activity	94%	91%	91%
Total	323,825	310,052	9,231,745
Containerboard—Domestic Use	170,336	163,992	4,744,016
Liner	115,444	110,391	3,165,964
Corrugating Material	49,503	48,141	1,422,114
Chip & Filler Board	5,389	5,460	155,938
Boxboard—Domestic Use	99,828	89,801	2,879,629
Folding	60,630	54,037	1,720,786
Set-Up	11,465	10,342	325,290
Special Food Board	27,733	25,422	833,553
Other Paperboard	53,661	56,259	1,608,100
Containerboard Type	23,745	26,270	767,776
Boxboard Type	29,916	29,989	840,324
Total Orders			
Received	313,360	316,273	
Unfilled End of Week	457,753	464,279	

Alvin H. Johnson & Co.

INCORPORATED

Consulting and Designing Paper Mill Engineers

415 LEXINGTON AVENUE NEW YORK 17, N. Y.

PAPER MILL DESIGN PROCESS ENGINEERING POWER PLANTS

STRUCTURAL AND ARCHITECTURAL DESIGN

REPORTS APPRAISALS ESTIMATES AND SURVEYS

One in a series of interviews with the men who are "Virginia"

"Many mills use our hydro in 2-stage groundwood pulp bleaching—and the new chip pulp demands a 2-stage bleach to reach the 75-plus brightness range"

Technical service supervisor Bob Barton and Tom Allan, assistant manager, Industrial Sales Department, Virginia Smelting Company, answer questions on 2-stage bleaching of groundwood and mechanical pulp made from hardwood chips.

Thomas T. Allan and Robert W. Barton

Q What is the economical break point between 1- and 2-stage bleaching?

Mr. Barton—There is no hard and fast rule, because so many factors enter in—the brightness level desired, the type of pulp, the cost of the present bleaching operation. Generally, I would say the break came at around 12 brightness points. A peroxide stage *can* be pushed beyond this. But to get a really appreciable gain at reasonable cost requires 2-stage bleaching—that is, one of peroxide and one of hydro.

Mr. Allan—Sometimes a mill using one stage of peroxide will use its bleached pulp storage chest for touching up the pulp with hydro and pick up a couple of points economically. It's usually cheaper than using peroxide. You see, the peroxide hits a flat point in its brightness-concentration curve. At that point it often takes another whole percent of peroxide to pick up one brightness point. And the cost is around $4 extra. For the same cost, five points of brightness may be obtained with a second stage hydrosulfite bleach.

Q Is 2-stage bleaching a way to be sure of getting high brightness?

Mr. Barton—Yes. To get the highest possible brightness in groundwood paper, the 2-stage bleach is the surest and most economical method. It seems to me the specialty paper manufacturers—the firms making special printing grades—will eventually require 2-stage bleaching.

Mr. Allan—That's right. Usually the 2-stage operation is chosen because brightness is the primary consideration. However, I do know of one mill that's considering going to 2-stage because of cost. They reach about a 72 brightness with one stage of peroxide, but the costs sometimes go up to $15 a ton. With a second stage the savings would be really worth while. I would say that the mill that wants to hit up in the 75-plus range just about *has* to go to two stages. And the competitive situation is beginning to make more and more mills consider this possibility very seriously.

Q Why is 2-stage bleaching so important with mechanical pulps made from caustic pretreated hardwood chips?

Mr. Barton—Because this is about the only way to get a high brightness from these so-called caustic pulps. And I think the chip pulp is going to have much wider use, largely because of availability of hardwoods. This pulp can be bleached with chlorine, but its final brightness is unstable, and the stock gets a definite yellow tinge. The process is rather different from bleaching groundwood. You start by acidifying and washing the stock. It is then bleached at about 180°F with 3% peroxide, using more caustic buffer than with groundwood, to get a brightness of about 70 points.

Mr. Allan—This stock has a very low initial brightness—about 40, I'd say. With 3% peroxide you can pick up about 30 points. Then to get the final brightness up where it's wanted, the pulp is bleached in a second stage with hydrosulfite to give a final brightness close to that of a bleached chemical fiber.

Facts on 2-stage bleaching

Yours for a phone call, wire or letter. We will send you any data you want—or, if you say the word, a representative will call on you at your convenience to discuss your problems.

• • •

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VIRGINIA SMELTING COMPANY
Dept. 284, West Norfolk, Va.

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Field Offices: New York • Boston • Chicago • Atlanta
Asheville • Philadelphia • Akron • Seattle • Memphis

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FOR ALL PAPER MAKING PURPOSES

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problem?

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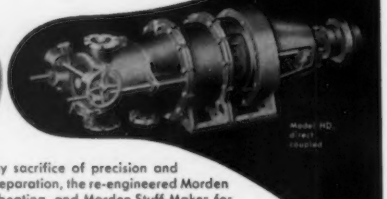
For almost every spraying application, there's a Spraying Systems Data Sheet that gives useful information on suggested installations and types of nozzles to use. If you have a problem, write and let us know the application involved . . . and we'll send the Data Sheet that applies.

SPRAYING SYSTEMS CO.
3220 RANDOLPH STREET • BELLWOOD, ILLINOIS

And . . . for complete spray nozzle information, write for Catalog 24.

NEW, IMPROVED DESIGN
SAVES 30% IN INITIAL COST



Without any sacrifice of precision and quality in stock preparation, the re-engineered Morden Stock-Maker for beating, and Morden Stuff-Maker for jordaning can now be installed with savings up to 30%. To get all the facts on new developments at Morden, write.

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Eighty pages of "laughs."
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METALS — I.B.B.M. all iron, bronze or stainless steels, body parts plain or rubber lined.

The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

- **The "FAST THREADED" screw stem and ball bearing speeds valve operation.**
- **The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.**
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- **Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.**

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INTRODUCING EXPANDED PRODUCT LINE

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SIZE RANGE INCREASED

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QUALITY... *All-Metal* Flexible Hose Products

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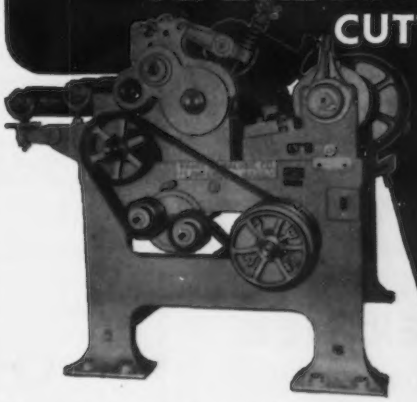
★ HAMBLET ★ CUTTERS PRODUCE



Heavy Duty: Single and Duplex from 100" to 200" wide. Knife capacity 450 pounds. Speeds to 600 feet per minute. Also used on special heavy cutting applications below 100" width.

Also
- LAYBOYS
- BACKSTANDS

Write for Further Information Today

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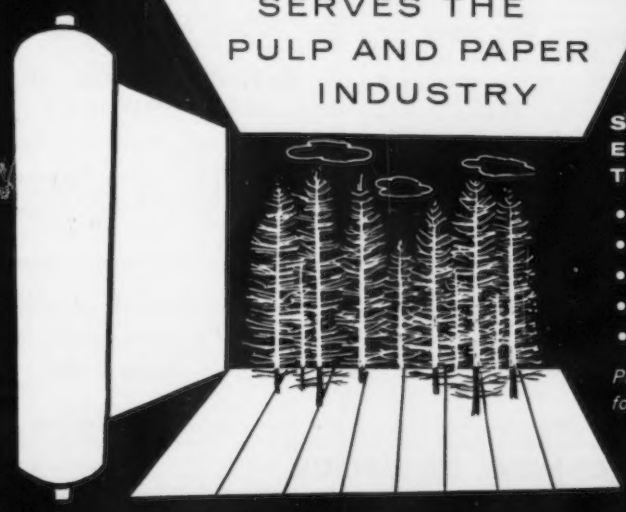

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- Construction

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PAPER TRADE JOURNAL

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OPPORTUNITIES—$1.50 a line. Minimum charge $5.00.

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TECHNICAL SALES REPRESENTATIVE

AAA-1 company in the machine clothing field has unusually fine growth opportunity for a technically qualified sales representative who will cover the Pen-Jer-Del area. Prefer man with technical or paper manufacturing background and three to five years experience selling to the paper industry. Age 32-45. All expenses, salary and bonus. Send resume and photo. Salary and opportunity to advance commensurate with demonstrated abilities and experience. Address Box 60-162 care Paper Trade Journal.

A-15

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Required, at once:

CHIEF DESIGN ENGINEER

. . . paper mill machinery

This position is quite an unusual one. It affords opportunity to head up an Engineering Division in a company prominently identified with Canada's pulp and paper industry. Furthermore, it is a permanent "career" position which carries a generous starting salary and leads directly to senior management . . . for this and other reasons which will be fully discussed with selected candidates, it is a position well worth exploring.

To merit consideration, a candidate must be a recognized authority on "paper machine design" and rank high as an administrator. Age, preferably under 45.

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Dominion Square Building, MONTREAL.

★Consultant . . . . to Management seeking Executives, particularly Engineers

A-15

Help Wanted

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$6000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 49 year old service connects you with best openings. You pay us only nominal fee for negotiations; This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 563 Brisbane Bldg., Buffalo 3, N. Y. A-15

CHEMICAL ENGINEER

Alert, personable young man, 25 to 35 years old, with paper mill chemistry or supervisory experience to aggressively assume responsibilities of Assistant Plant Manager and undertake management training with a medium sized Specialty Paper Producing Plant. Write Plant Manager, Hamilton Plant, Nicolet Industries, Inc. P. O. Box 777 Hamilton, Ohio

A-22

CHEMICAL SPECIALTY SALESMAN

We are looking for a young salesman with a paper background to work in the midwest out of our Chicago office. Position is newly created because of sales expansion in the paper industry and can lead to greater responsibilities. Products include defoamers, surfacants & etc.

Reply in Confidence
M. E. Reiner

E. F. Drew & Co., Inc.

15 E. 26 St., N. Y. 10, N. Y.

A-15

NORTHEASTERN Cylinder Board Mill needs qualified Chemist with some production background and technical experience. Salary open. Address Box 60-152 care Paper Trade Journal.

A-22

MAINTENANCE ENGINEER WANTED, preferably graduate engineer, to take charge maintenance, millwrights, pipe fitters, etc. Should be good handler of men. Location Pacific Coast; good salary. If available, please send resume to CHARLES P. RAYMOND SERVICE, Inc., 294 Washington St., Boston, Mass., tel: LIberty 2-6547.

A-15

WANTED — *TECHNICAL SUPERVISOR*

Technically trained college graduate, with at least 5 year's experience in Paper Industry to supervise Technical Operation and Quality Control in a Specialty Mill in Midwest.

Excellent opportunity for an ambitious man to advance to positions of greater responsibility in production. Good starting salary and additional benefits. Reply to Paper Trade Journal, Box 60-161, giving education, experience and references.

A-22

Help Wanted advertisements continued on page 72

FOR SALE

BARKING DRUM

1—12 ft. diameter x 45 ft. long

BEATERS

2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54" x 48", cast iron tubs.

CALENDER STACKS

1—3 roll 84" calender stack.
1—4 roll 72" Calender Stack. (Extra heavy duty).
1—5 roll 82" face.
1—5 roll 86".

CHIPPERS

1—96" Murray 4 knife Chipper—anti-friction bearings.
1—84" 10 knife Casthage Chipper. Anti-friction bearings, with motor

COATER

1—42" Chapman Extrusion Type Coater

CONSISTENCY REGULATOR

1—Poirier Stainless Steel, new condition

CRUSHER & HAMMERMILL

1—Murray Chip Crusher.
1—Williams Hammermill.
1—Jeffrey Shredder.

CYLINDER MOLDS

1—30" diameter x 72" face.
5—36" diameter x 75" face, with couch rolls
1—36" diameter x 82" face.
3—36" diameter x 90" face, 18" diameter couch rolls.
3—42" diameter x 106" face.
2—60" dia. x 170" face.

DISINTEGRATOR

1—Shartle 8" disintegrator (new) with 125 horsepower induction motor (totally enclosed)

DRIVES

1—#6 Reeves vertical—anti friction bearings, totally enclosed.
1—Jones 21 H.P., ratio 10 to 1 (enclosed angle drive)
1—#4 Reeves Drive.
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.)

DRYERS

1—16" diameter x 54" face (steel).
1—28" diameter x 84" face.
1—28" diameter x 48" face.
2—Calender Dryers, bronze, 30" x 128" with frames, gears & necessary rolls to make up the unit.
1—36" diameter x 44" face.
5—36" diameter x 76" face.
2—36" diameter x 84" face.
14—48" diameter x 48" face with bearings.
2—48" dia. x 52" face with frames, gears, bearings.
2—48" x 60" face with frames, gears & bearings
1—48" x 96" face.
6—48" diameter x 130" face.

EMBOSSING CALENDERS

1—43" 3-Roll Embossing Calender.
1—51½" 3-roll Smoothing Calender.
1—57" 3-roll Embossing Calender.
1—62" 2-roll Embosser.
1—90" 2-roll Smoothing Calender.

FILTER

1—Dorr-Oliver Filter, 3 ft. dia. x 6 ft. face, stainless steel construction, with pump.

FLAT SCREENS

1—12" Plate "Packer".

FOR SALE

JORDANS

1—Jones Standard, new spare tackle, with 75 h.p. motor.
1—Noble & Wood Monarch, Type D, anti friction bearings.
1—Noble & Wood Baby Jordan, anti friction bearings, with 20 h.p. motor.
1—#6 Miami, anti friction bearings.

LABORATORY EQUIPMENT

1—4" face x 36" diameter Saveall
1—Washer for 5 lb. Beater.
1—24" Saveall, stainless steel.
1—20" Fourdrinier Wet End & Press Section.
2—8" x 8" Valley Sheet dryers.
1—12" x 12" Valley Sheet dryer.
1—18" x 20" Williams Sheet Dryer
1—15 lb. F. D. Jones Beater
1—8" x 8" Valley Hydraulic Press.
1—Greene Freeness Tester.
1—Cady Micrometer.
1—High speed Jordan, anti-friction bearings.
7—Mullen Testers, motorized.
1—2 qt. Auto Clave. Stainless Steel.
2—Elmendorf Tear Testers.
1—Hermann Disintegrator (new).
1—27" High Solid Coater.
1—Noble & Wood Baby Jordan, anti friction bearings, with 20 h.p. motor.

MISCELLANEOUS

1—Bird Centriffler, built 1958, new condition.

MOTORS

4—25 h.p. Westinghouse, totally enclosed, ball bearing. 705 r.p.m

PRESS ROLLS

2—Chilled iron, chrome plated 9" x 72".
1—Chilled iron, chrome plated 10" x 74".

PULPERS

1—#1 Jones Pulp Master.
1—Black-Clawson Hydraslusher, 40 ton capacity, continuous type, complete with pump, regulating box and 125 h.p. motor, new, never used

PUMPS

1—Economy Fan Pump 6000 g.p.m., 20' head, 50 h.p. motor.

REELS

1—72" Downingtown Reel, 2 bowl.
1—84" 3 bowl revolving reel.
1—86" 2 bowl reel.
1—100" Rice Barton 2 bowl Reel, heavy duty.
1—116" Downingtown, 2 bowl, anti friction bearings.
1—123"—3 bowl Revolving Reel.
1—134" 2 drum.

REFINERS

1—Rice Barton Dynofiner, details on request.
1—12" Wiener Refiner, with 200 h.p. motor.
2—36" Bauer double disc #185E Refiners, each with two 100 h.p. motors.

ROLLS

Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS

4—#2A Bird Rotary Screens, copper vats.
7—Trimbey, Senior Knotter Screens.
1—#2A—50 Bird, copper vat.
2—APMEW Rotary Pulp Screens.

SAVEALLS

1—24" Continuous Saveall, stainless steel.
1—LaMort 48" diameter x 82" face cylinder mold.
2—Savealls, cylinder molds, 42" diameter x 106" face, brand new vats.
2—Savealls, Rice Barton, cast iron vats, cylinder molds 48" diameter x 128" face, complete with 18" diameter couch rolls, all in very good condition.

FOR SALE

SHEETERS

1—44" Spot Sheeter Complete
1—60" Hamblet with layboy.

SHREDDER

1—16" "Swift" Paper Shredder.

SLITTERS & WINDERS

4—42" Cameron Type 6.
1—42" Cameron Type 26-2A.
1—42" Cameron Type 40-2.
1—50" Cameron Type 6.
4—52" Cameron Type 9.
1—62" Cameron Type 6
1—86" Two Drum Moore & White 50" diameter rewind.
1—96" 4 drum Moore & White winder.
1—64" Waldron, Shear cut.

SLITTING DEVICE

84"—Quick change slitting device shear cut, complete.

STOCK PUMP

1—12 x 20 Shartle Triplex, with spare parts.

SUCTION COUCH SHELL

1—Downingtown suction couch shell only, 127½" face 26" diameter.

SUCTION COUCH ROLL

1—Beloit, 36" diameter x 246" face, SKF bearings.

SUCTION FELT ROLL

1—Gilbert & Nash 122" face.

SUCTION PRESS ROLL

1—Sandusky 18" dia. x 138" face Suction Press Roll.

SUPER CALENDER STACK

1—9 Roll 56".

TOILET WINDERS

1—72" Hudson-Sharp (Surface type winder).

VACUUM PUMPS

2—#1 Nash Hytor.
2—#3 Nash Hytor.
1—#6 Nash Hytor (Bronze)
1—#7 Nash Hytor, with 75 h.p. synchronous motor.
1—H-3 Nash.
1—K-5 Nash.
2—L-4 Nash.
1—L-5 Nash.
2—Connersville, 14 x 20.

VATS

2—Brand new Downingtown Iron End Vats, for 42" diameter x 112" face cylinder molds. Will cut down to your size.

WET MACHINES

1—84" Kamyr Complete Wet machine
1—96" Black-Clawson Wet Machine, new, never used, complete with pumps, motors and drive

YANKEE DRYER

1—12 ft. diameter x 181½" face.

Paddy Ross, Pres.

J. J. ROSS COMPANY

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A-15

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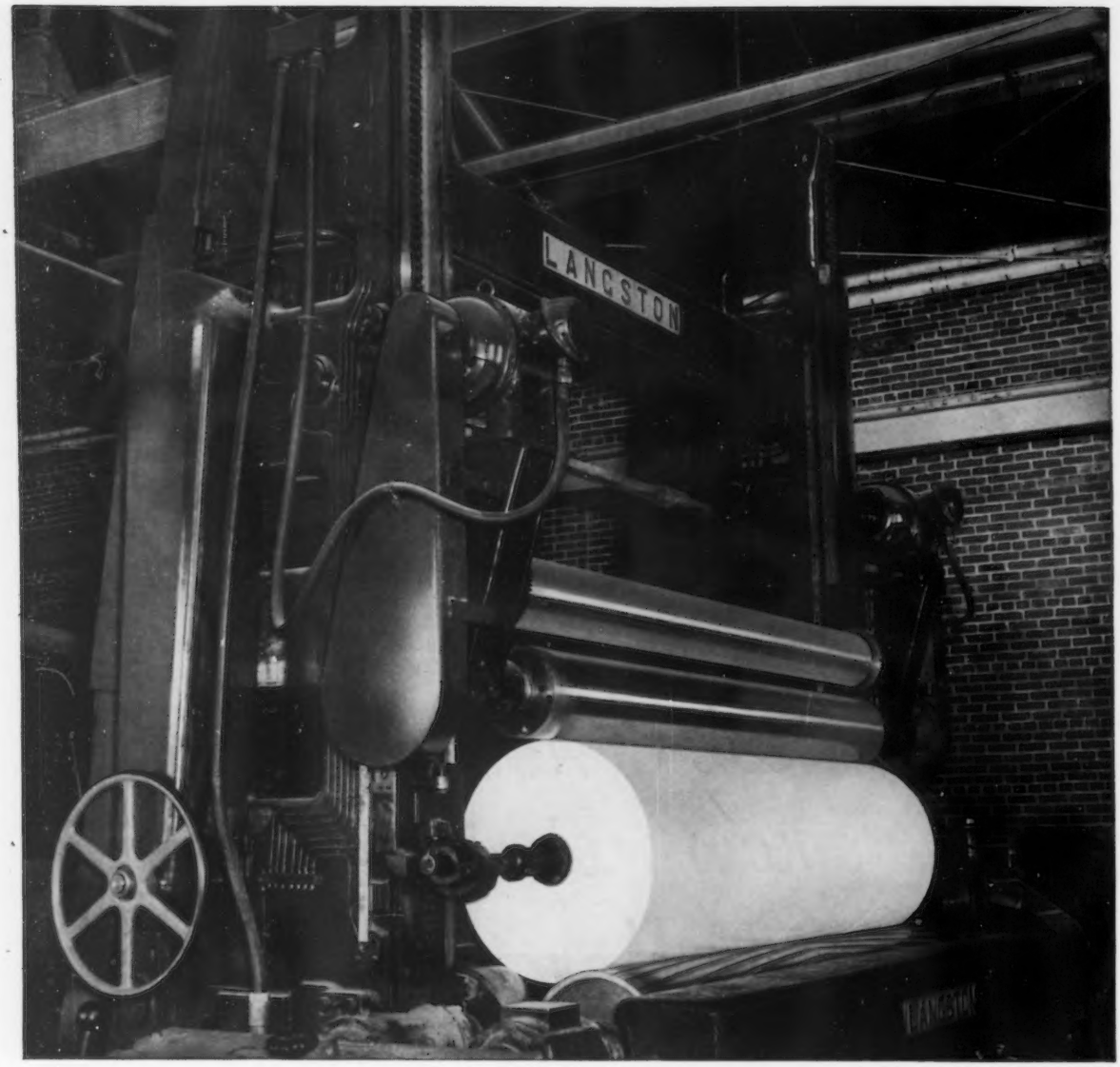

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